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JANUARY 12, 1935

Railway Age

FOUNDED IN 1856

Railways or Public Works?

A Golden Opportunity

That the Administration has for the moment turned toward long-range social planning does not alter the fact that there exists ready at hand an outstanding opportunity to alleviate with one stroke two important shortcomings in the nation's economy. It is of national importance that this confluence of possibilities be recognized and taken advantage of by the 1935 Congress.

Easily the most immediately urgent problem before the country is the creation of employment by stimulation of the durable goods industries. The railroads are in need of rehabilitation if many of them are not to become public liabilities.

Properly conducted financing, only in small part with Federal Funds, of a comprehensive railroad equipment rehabilitation program would importantly forward the solution of these two problems and at the same time meet the most essential qualifications of any public works program—that the expenditures be self-liquidating and safe and still confer a direct public benefit.

If modern motive power and car design, together with the latest traffic control, signalling and braking devices, replace the large percentage of admittedly obsolete railroad equipment, many railroads can sharply reduce operating expenses. This premise has been validated by practically every study of railroad equipment made during the past few years and is assented to by a majority of railroad and equipment officials. A new locomotive replacing an obsolete one (and the great majority are obsolete) can pay for itself in three or four years, and light-weight cars and other devices can effect the same sort of economy in less degree.

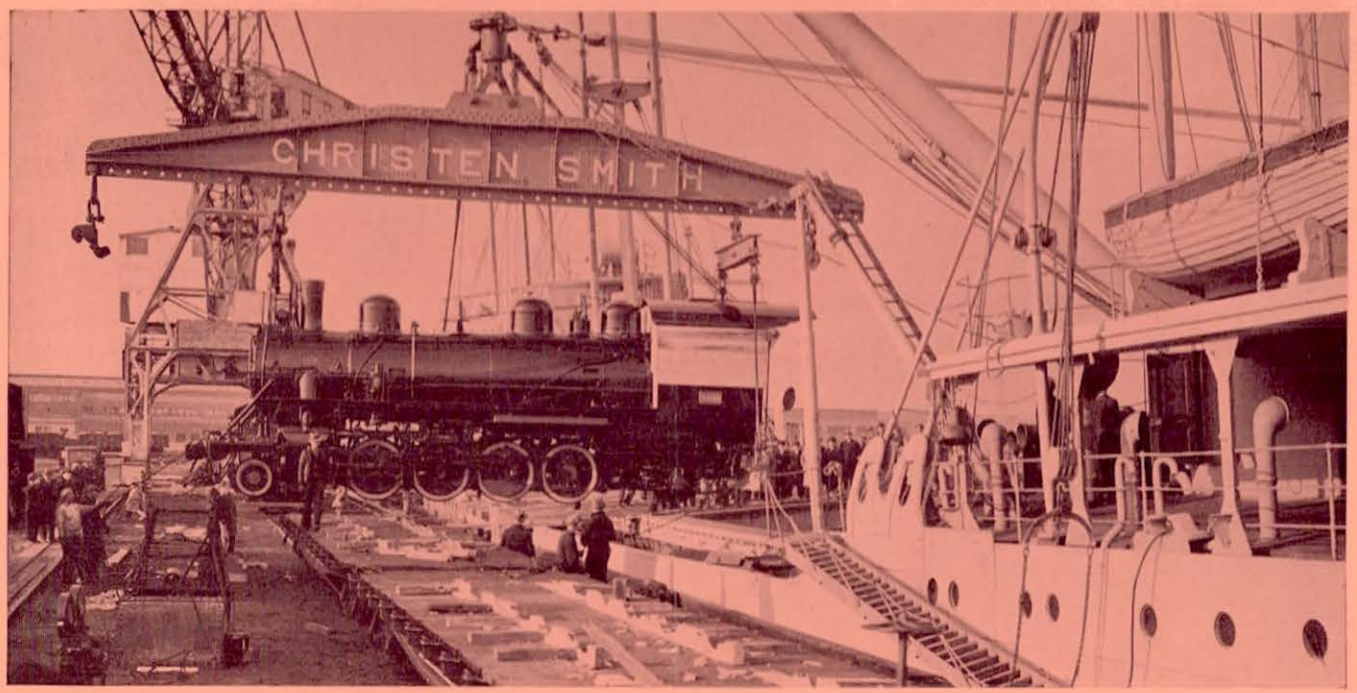
The practical working out of such a program will need the Federal Co-ordinator's technical surveys, the co-operation of the Association of American Railroads and of individual railroad managements—and probably an act of Congress. But these conditions could be fulfilled within a few weeks.

Despite the partial over-capacity of the equipment trade it is a reasonable assumption that important railroad purchasing would stimulate a modernization program. The steel industry, operating at less than 35 per cent of capacity, already has turned to modernization to meet production problems, and modernization means a flow of private capital into payrolls.

The railroads of the nation perhaps are not a "natural resource" of the type which the Administration seems disposed to protect in its far-flung social scheme, but they are most certainly a national asset. Circumstances allow the conservation of this asset to deal a vigorous blow at unemployment.

These problems are lined up, like partridges on a limb, waiting for the Administration and the railroads to shoot them down and bring home a full bag.

—an Editorial from the Wall Street Journal



TEN LOCOMOTIVES FOR CHILE

Baldwin recently shipped, from its Eddystone dock, ten Mikado type locomotives for the Chilean State Railways.

These locomotives formed part of the largest export shipment of railway material to leave the United States since 1929.

Large numbers of Baldwin steam and Baldwin-Westinghouse electric locomotives have been serving the railways of Chile for more than 50 years.

• • •

Whether for service in the United States or abroad, new locomotives of modern design will more than pay their way by their increased hauling capacity at speed and economy of operation.

It takes Modern Locomotives to make money these days!

THE BALDWIN LOCOMOTIVE WORKS

PHILADELPHIA

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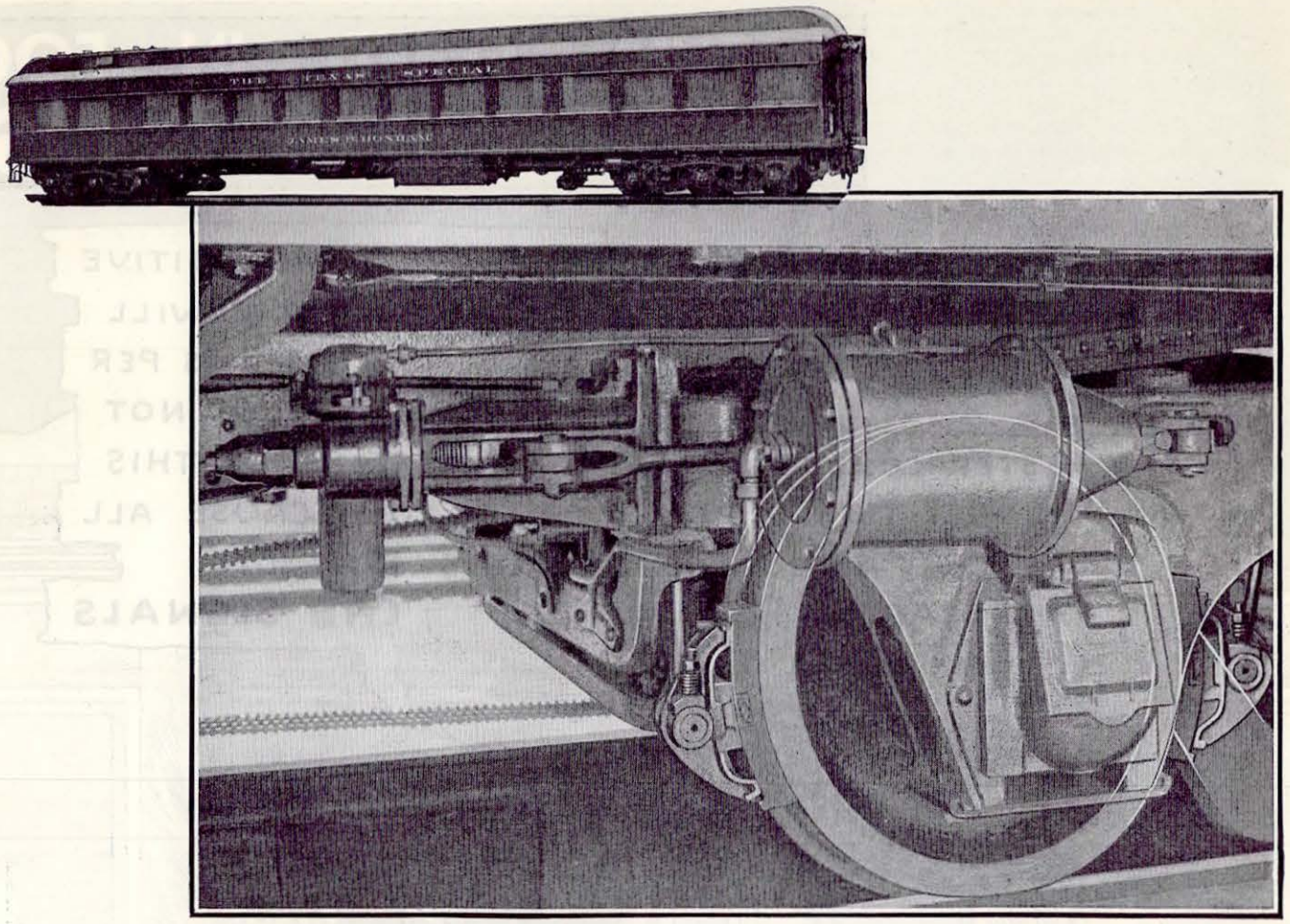

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Unit Cylinder
CLASP BRAKES

The use of the Simplex quick-acting unit cylinder brake on all types of passenger equipment, permits faster, more dependable schedules—reduces vibration and noise—facilitates inspection and repairs—and permits the free swiveling of trucks on curves.

The brake cylinders being mounted on the truck leave the portion of the underframe between the trucks available for the application of electrical, air conditioning and other special equipment.

AMERICAN STEEL FOUNDRIES

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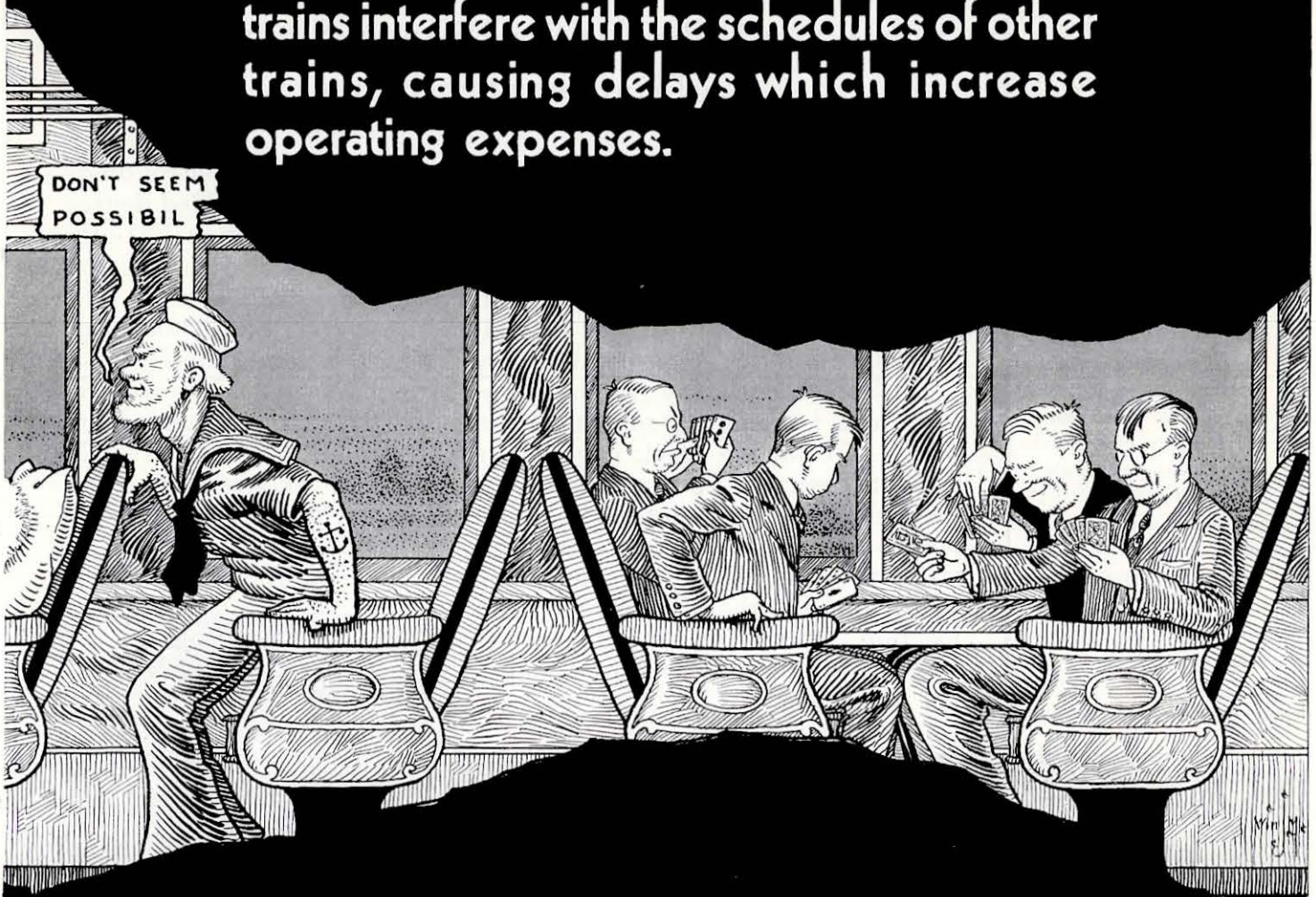
FULL SPEED IN FOG WITH G-R-S

I SAY, MISTER CONDUCTOR— HOW MUCH WILL THIS DENSE FOG DELAY OUR ARRIVAL AT CHICAGO?
AH, PARDON MY POSITIVE ACCENT, BUT ··· WE WILL ARRIVE ON TIME AS PER USUAL. FOG DOES NOT DELAY TRAINS ON THIS RAILROAD BECAUSE ALL TRAINS RUN ON CAB SIGNALS

G-R-S Cab Signals make it possible to maintain schedules regardless of restricted vision during fog or thick weather, because they give enginemen up-to-the-second indications of track conditions ahead.

OR THICK WEATHER CAB SIGNALS

Late trains inconvenience and displease passengers and shippers. Late trains interfere with the schedules of other trains, causing delays which increase operating expenses.



Cab Signals are the Ultimate Signals

GENERAL RAILWAY SIGNAL COMPANY

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Montreal London Paris Tokyo Madrid Melbourne Calcutta Buenos Aires

ADDED SAFETY FOR HIGH-SPEED TRAINS

BETHLEHEM PERFECTS FIVE-POINT SAFETY SWITCH CONTROL

New Device Gives Positive Distance Signal Warning of Danger at Switches

PROVED IN SERVICE

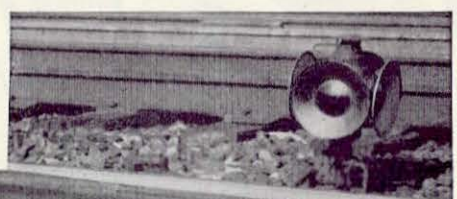
The Bethlehem Positive Signal Stand installation is used in connection with either one of two well-known, thoroughly tried and proved switch stands, made by Bethlehem Steel Company. A latch, lock and electric circuit control complete the assembly. These have been given a thorough service trial and have demonstrated complete reliability.

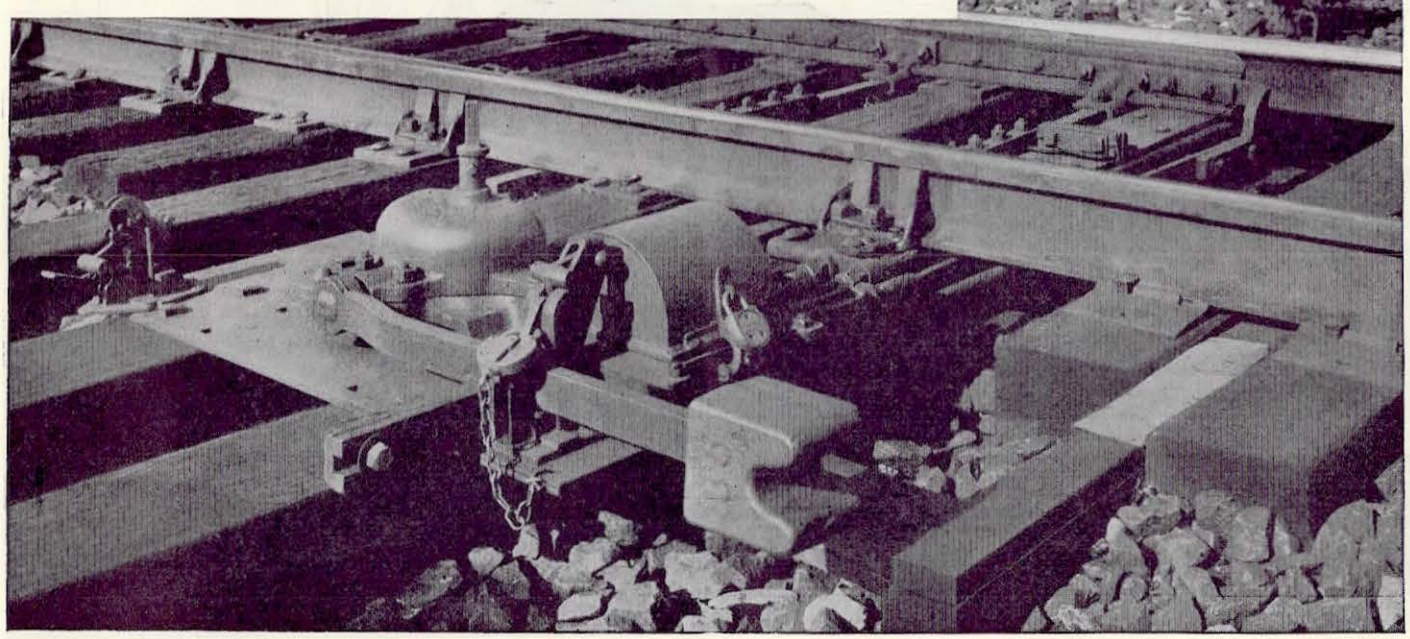
Complete detailed information on this development will be supplied upon request.

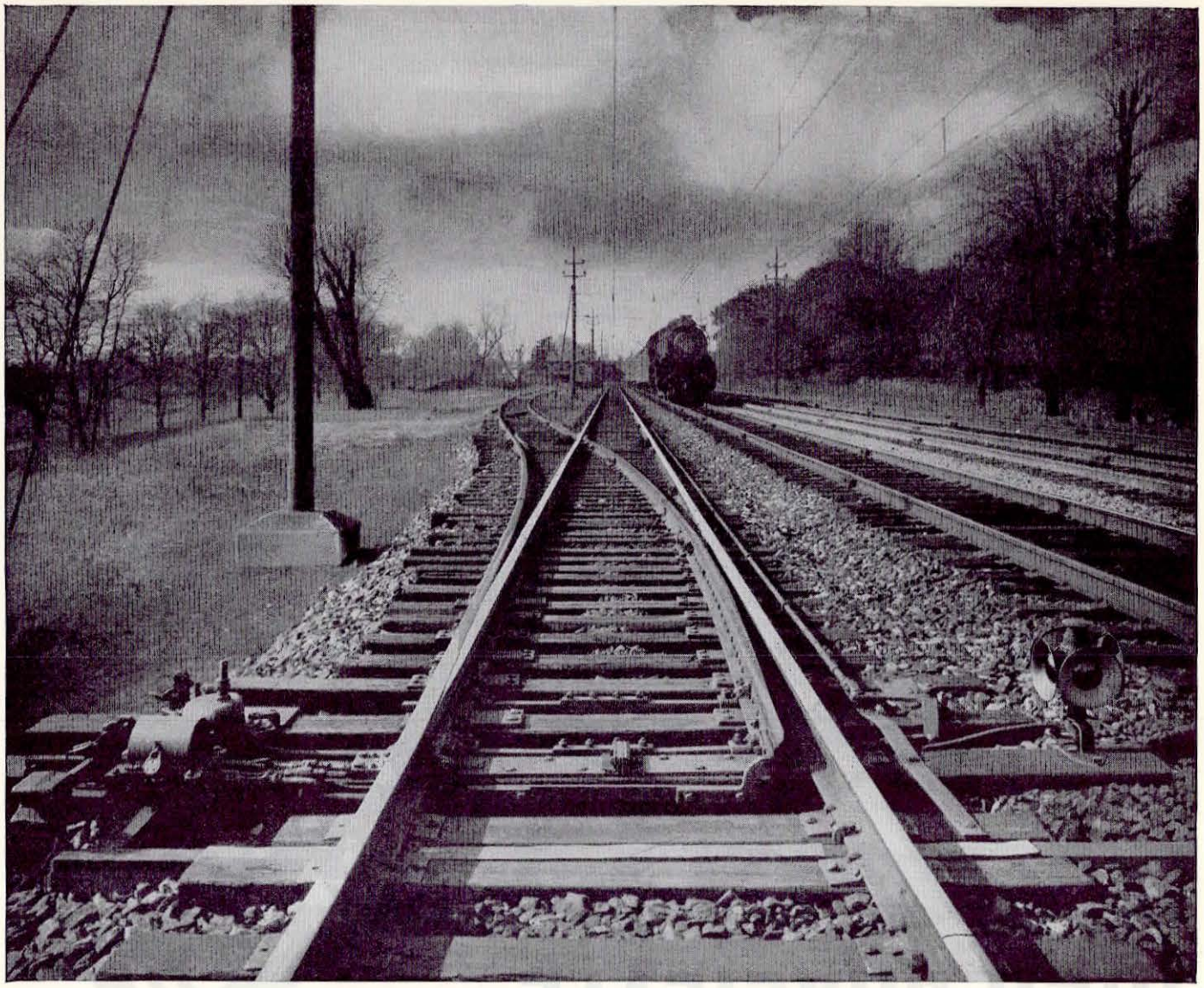
Bethlehem Steel Company has introduced a new switch control operating in conjunction with a distance signal bringing an added degree of safety to the operation of high-speed trains. It is known as the Bethlehem Positive Signal Stand—A Five-Point Safety Switch Control.

This Bethlehem Positive Signal Stand combines the functions of a switch stand, the throwing of a derailer in a turnout, a distance signal indication, a facing-point lock and a switch-point detector.

With this device, any switch in track-circuit territory, however remote, can be made as safe as one controlled from an interlocking plant. A complete check is given on faulty conditions at the switch, even in cases where the target indicates clear. If a switch is run through and the points left open without changing the target position, the Bethlehem Positive Signal Stand gives an automatic warning of this condition, at the distance signal. Regardless of the distance to the protective signal location, an unsafe condition at a switch instantaneously shows a danger indication.







BETHLEHEM *POSITIVE* SIGNAL STAND

FIVE POINTS OF SAFETY

1 Danger is indicated the instant the latch holding the switch-stand lever is lifted.

2 Danger is indicated as soon as the switch points are moved more than 1/8 inch from their main-line position, and danger continues to be indicated until they are restored to the main-line position and locked.

3 Danger is indicated if the switch is run through, leaving the switch points open 1/8 inch or more.

4 Safety is indicated only when switch points are in correct position for safe main-line operation, and the switch-stand lever locked.

5 Switch points protected by a positive safety point-lock automatically operated by the switch stand.

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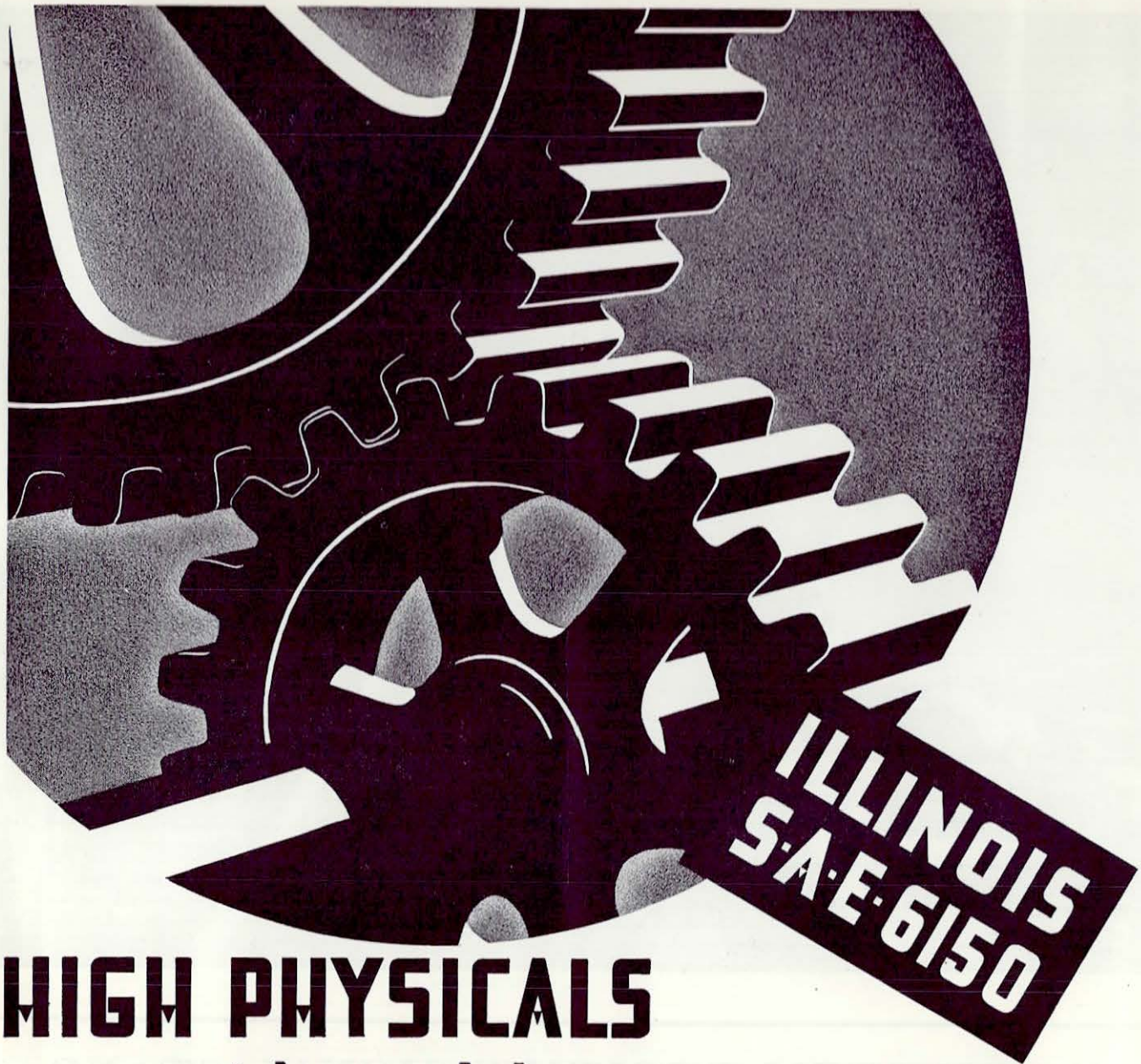

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without elaborate treatment

HERE'S a steel that has been called "fool-proof" from a heat-treating standpoint. It can be brought to the desired tensile strength by a simple quenching and drawing treatment.

Illinois' S. A. E. 6150 is uniform in grain structure and has high resistance to shock. It is readily forged and can be machined to a fine finish. It is subject to only slight distortion under oil hardening and hence is useful for parts which must be heat treated after machining.

Illinois Steel Company will be glad to furnish further information on this or other alloy steels—or to consult with you regarding applications to your specific needs.

ILLINOIS STEEL COMPANY

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United States Steel Corporation Subsidiary

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ALWAYS DEPENDABLE

"AB"
THE NEW FREIGHT BRAKE

. . . Meeting the demands of Modern Freight Trains through wider performance range—"A B" the New Freight Brake is also furnishing economies heretofore impossible.

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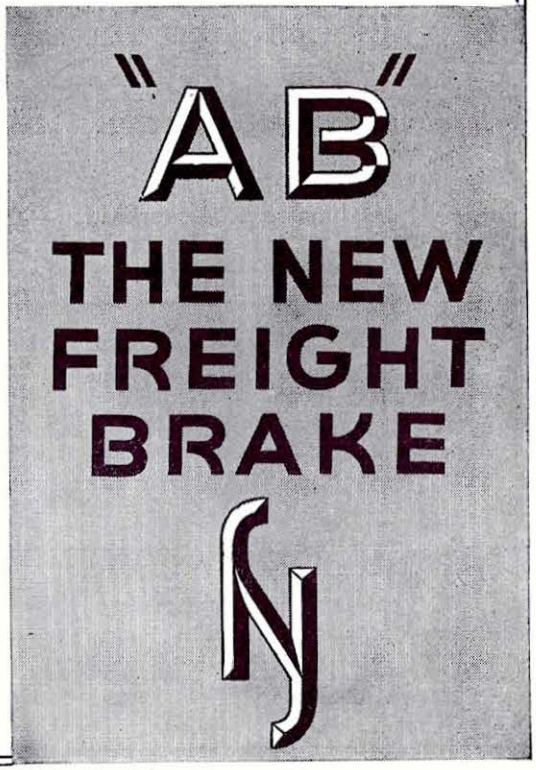
. . . On New or Existing Equipment, "A B" brakes insure savings which soon multiply to equal installation Cost — thereafter, resultant economies are a contribution to profit.



Railroad Consolidation or Government Ownership?

W. W. Atterbury, President of the Pennsylvania Railroad, in a recent discussion of this subject stated:

"Certainly broad and bold consolidation would offer an infinitely preferable way out, and I reiterate the opinion that sooner or later we shall have to come to it if we are to avoid government ownership. . . ."

RAILROAD MERGERS

By JOHN WILL CHAPMAN, B.S., M.C.S.

Member of Investment Staff, United States Trust Company of New York; Formerly Statistical and Security Analyst for Standard Statistics Company

THIS timely new book deals with the causes, methods of effecting and results of railroad mergers. It is packed with facts of value to anyone concerned in any way with changes to be effected through the contemplated mergers of American railroads into large competing systems.

WHAT REVIEWERS SAY

"It weighs the respective merits of the more recent type of regional consolidations and the older end-to-end type, and it attempts to gather, sift, and summarize in an orderly way the more important discussions of rail merger problems."—*Barron's.*

"A close student of the railroads, Mr. Chapman has assembled in this timely book a great deal of general statistical information, conveniently arranged, on the evolution of consolidations and unifications into the giant trunk lines of today."—*New York Daily Investment News.*

"The merger problem now confronting us is discussed in some detail with the probable benefits to be derived from the various proposals advanced by the Interstate Commerce Commission, and several others."—*The American Banker.*

"The author weighs the evidence on operating advantages and disadvantages, delves into the financial aspects, and explains the effect of mergers on the market action of railroad securities."—*Wall Street Journal.*

"The whole volume, including the appendices, forms a compact and convenient reference for those seeking data upon this live and disturbing transportation and financial problem—mergers." Professor G. Lloyd Wilson, University of Pennsylvania, in the *Annals of the American Academy of Political and Social Science.*

Some of the Features

Historical Survey—advantages and disadvantages of mergers before 1920.

Merger Problems Under the Transportation Act. Maintenance of competition—Maintenance of existing routes and channels of trade—Valuation of properties—Exact provisions of the Act concerning consolidations—Relation between consolidations and unifications—Exact provisions of Act concerning unifications—Amendments in 1933.

Special Problems. Holding companies—Short lines—Minority stockholders.

Progress of Mergers after Transportation Act. The record from 1920 through 1934—Proposed particular mergers—The I. C. C. Plan—The Four-System Plan of the Eastern trunk-lines.—Current proposals.

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Appendices and Bibliography.

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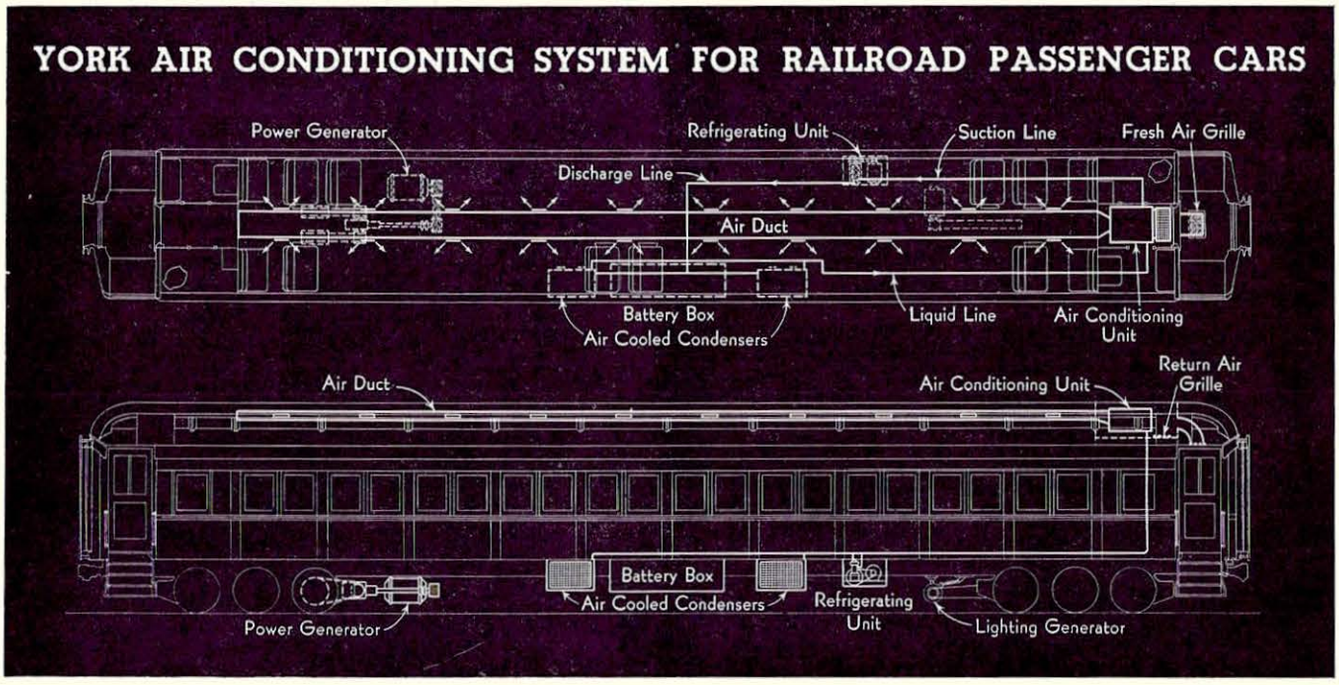
Do you know that York Air Conditioning has been installed on many cars at an average total investment of $6,000... that in some cases total costs have run as low as $5,000? Low initial investment... exceptionally low power and maintenance expense result in a minimum total cost. From a mechanical standpoint the outstanding performance of York Air Conditioning, since its introduction to the rails four years ago, speaks for itself. Millions of car miles on hundreds of railroad passenger cars have definitely established a record for dependability and ruggedness... minimum interruptions of service... light weight, quietness and absence of vibration... simplicity of installation and operation. Whether your interest is purely economic or strictly mechanical, it will pay you to investigate York Air Conditioning for railroad passenger car service. You will find that its economic features are on a par with its outstanding mechanical development.



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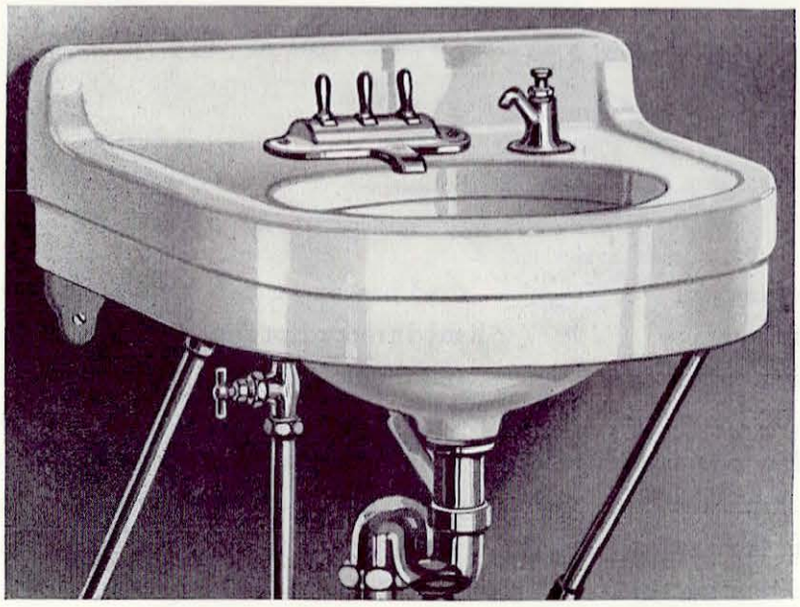
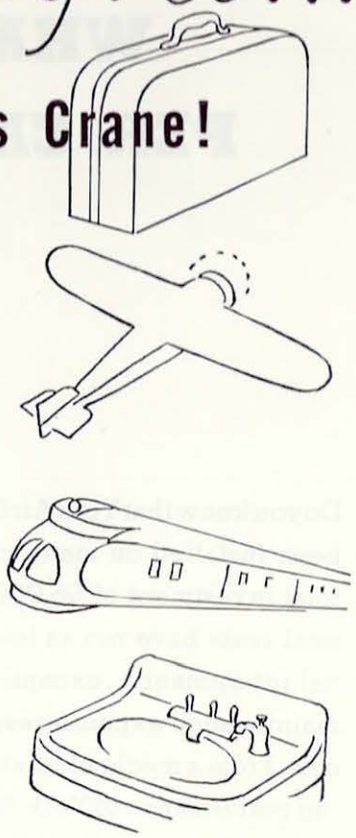
EVERYTHING IN TRAVEL IS *Lightweight...*

why not China lavatories, too, asks Crane!



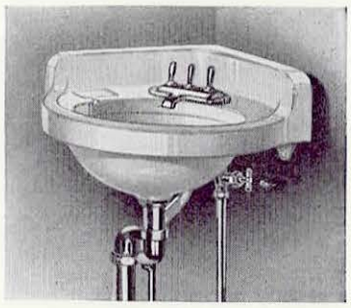


This Crane lightweight railroad lavatory RR 108-A, 18x15¼ inches, weighs only 32 pounds without trimmings.

Everything is being sheared of *excess* weight . . . baggage, planes, streamline trains. Very little weight goes along just for the ride nowadays! It's perfectly natural, then, that Crane should — with characteristic versatility — produce a new *lightweight* lavatory to match the trim, sleek, lightness of modern day coach, sleeping car and private coach.

Vitreous china always has provided durable and lasting beauty in a lavatory plumbing fixture. Crane designers said: "We'll produce an identical *lightweight* vitreous china fixture—with the same smooth, glossy beauty that people are accustomed to in lavatory fixtures for their homes, clubs and smart hotels." And they did . . . the Railroad Lightweight Vitreous China Lavatory!

This trim modern lavatory is easy to clean, has the same permanent beauty and sanitation as ordinary vitreous china lavatories. It has a splash rim, hot and cold water supply and pop-up waste fixture with lever handle self-closing valves and push-button liquid soap dispenser. It is furnished in white or in color, to match the decorative treatment of modern lightweight train interiors. The Crane line of vitreous china lavatories for railroads is complete. Write for your copy of Circular AD78.



Crane lightweight railroad corner lavatory RR110-A, 12x12 inches, weighs only 16 pounds without trimmings.

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Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name registered U. S. Patent Office.

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NRA U.S. CODE GRAPHIC ARTS INDUSTRY

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A description of these new air-conditioned cars in connection with the design of which unusual provisions have been made for comfortable and luxurious travel.

Can We Expect Better Rails? **40**

J. R. Mooney, assistant manager of the Rail and Fastenings Department, Robert Hunt Company, Chicago, gives an account of recent developments in manufacture that should insure improved service in track.

Expenditures for Railway Supplies Up 160 Million **47**

A compilation showing purchases for 1934 to be the largest in three years despite severe slump since June.

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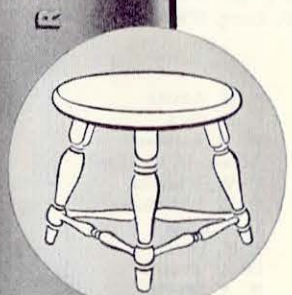
WHAT MAKES THIS A BETTER PIPE?

IT'S THE OLD STORY OF THE THREE-LEGGED STOOL

Take any one of the legs off a three-legged stool and it won't stand up. Leave out one of the three chief elements in Toncan Iron and you can't possibly get the same performance out of the resulting metal. » » The excellent service records that Toncan Iron Pipe has made in so many severe uses are directly traceable to the metal of which it is made. It is an alloy of carefully-refined open hearth iron, copper and molybdenum, processed under the supervision of men skilled in the making of fine alloys. Years of experience have proved that every one of these elements is necessary—that each alloying metal must be added at the right time and at the right temperature in exactly the right proportions. There is no guesswork—and that's what makes Toncan Iron Pipe better. That's why Toncan Iron ranks first in rust-resistance among the ferrous metals after the stainless steels. » » The interesting story of the development of Toncan Iron Pipe and its many applications is fully told in "Pipe for Permanence." Write for a copy. » » » » » » » »



REPUBLIC STEEL CORPORATION
GENERAL OFFICES YOUNGSTOWN, OHIO

TONCAN COPPER MOLYBDENUM IRON PIPE

State Socialism and Its Ostensible Opponents

The *Railway Age* is especially interested in the editorial policies of the Chicago Tribune regarding government policies affecting business because the Tribune is the most typical and vehement spokesman of that large class of American business men who oppose application to their own industries of certain New Deal policies the equivalent of which they have got applied, and still want to have applied, to the railroad industry.

The *Railway Age* has tried twice now—in editorials in its issues of September 15 and December 15, 1934, —to get the Tribune to state frankly and specifically what government policies respecting the railways and other carriers it actually favors and its reasons for favoring them. Such a statement would be illuminating. It would show whether, and, if so, why, a great newspaper believes it can promote the public welfare by advocating the application of absolutely antithetical government policies to transportation and other industries; and this would throw light on the reasoning by which so many business men convince themselves that the railways should be able to prosper under policies of a kind that they loudly and solemnly asseverate would ruin their own industries. But unhappily the *Railway Age* has not as yet been able to get the Tribune to state clearly and unequivocally just what transportation policies it favors when it "roars so loud and thunders in the index." We flatter ourselves that we know the reasons for this but, because of that very circumstance, we are not optimistic enough to believe that we will ever be able to get the Tribune to take its readers into its confidence regarding the matter.

No Subsidies—Excepting for Ourselves

In its issue of December 10 the Tribune published an editorial purporting to be a reply to the *Railway Age's* editorial of September 15. In an editorial in our issue of December 15 we showed that the Tribune had dodged the most important issues involved, and that therefore its purported reply was hardly any reply at all. We asserted that its failure to answer our question, "Does the Tribune favor government subsidization of other carriers to provide competition with the railways?" meant that it did favor such subsidization. We asserted that both the changes in government regulation of transportation that it advocated and those that it opposed plainly meant that it favored "a continuance of regulation which would leave the railways tied hand and foot while being attacked upon every side by competitors that it contends should be left free to use every competitive weapon denied to the railways." The Tribune has since published various articles and editorials concerning transportation, in none of which has it repudiated the interpretation placed by us upon its policies, but in which it has repeatedly said things indicating that that interpretation was correct.

On December 22 the Tribune published an editorial defending its continued advocacy of large expenditures by the taxpayers of the United States upon the Mississippi waterway. It contended that the government's construction of the Panama canal plus the government's refusal since 1920 to let the railways fix rates to meet ocean competition have made it impossible for Chicago to compete on the Pacific coast with Atlantic seaboard cities. "The obvious cure," it said, "is for the western railways to establish rates from Chicago that will enable it to market its goods on the Pacific coast in competition with the eastern seaboard. * * * What else have we to turn to except waterway competition?" Instead of constantly stigmatizing railway managements for inertness and incompetency, why not mention the fact that the railways right now are carrying on a campaign for legislation to make practicable the "obvious cure" and help them to carry it on? Instead, in its "Platform for Middle West," which the Tribune runs at the head of its editorial columns, it includes "Save the Mississippi Waterway," but makes no reference whatever to the change in the Fourth Section of the Interstate Commerce Act that is neces-

sary to make possible what it declares is the "obvious cure."

Advocating "Pork Barrels"—While Denouncing Them

The Tribune's defense of its advocacy of additional large expenditures upon the Mississippi waterway is a perfect example of the way in which "pork barrel" expenditures are promoted by many of those who indulge in the most resounding generalities against them. The government having made huge expenditures upon the Panama canal—of which the Tribune was among the earliest and strongest advocates—and this and the government's policy of regulating railway rates to the Pacific coast having placed Chicago at a disadvantage, the Tribune now, while inveighing against other large expenditures of the taxpayers' money, advocates large expenditures especially to benefit Chicago. Most members of Congress will not heed the Tribune's diatribes against large expenditures upon unneeded public works in general, but they will gladly and greedily heed its selfish argument for large expenditures upon the Mississippi waterway. All such arguments for specific large expenditures are "right down their alley." They are the very stuff that "pork barrels" are made of. There is not a section, community, industry or class in the United States in behalf of whose supposed rights and interests a similar argument cannot be made—hardly one, in fact, in behalf of which some similar argument is not being made right now. Hence the virtually unanimous support in the last Congress, regardless of party, of every proposal for spending. Hence all the vast "pork barrel" appropriations now in contemplation by the Congress of spenders just assembled.

"Help Chicago"—By Railway Borrowing of "Easy Money"

In its issue of January 3 the Tribune published one of a series of articles the text of which is, "Make Chicago the first city in the world." In this article it advocated the expenditure by the railways of many millions of dollars to erect "a consolidated passenger station" on the Chicago lake front, and said, "If an agreement is reached, request may be made for loans from the Public Works Administration." This from a newspaper that almost daily impugns the intelligence of railway management and denounces the "easy money" policies of the Roosevelt administration! The railways involved need to make vast expenditures in the interest of themselves and of the many communities in the far-flung territories that they serve, but there is not any expenditure that there would be less economic justification for making under present conditions than for a "consolidated passenger station" on the lake front of Chicago. Railway directors and executives who would agree to try to borrow for such an expenditure now should be taken, not to the Public Works Administration, but to an alienist. Even if the real needs of the railways were much less dire and their financial conditions much better, why should they spend a large amount of money especially to help make Chicago, rather than some other city, "the first city in the world?" Largely owing to the Tribune's propaganda, Chicago is the most anti-railway city in the United States. As long as its business interests continue to favor government transportation policies that help airways, buses, trucks and waterways to destroy the earning capacity of the railways, obviously they should call, not upon the railways, but upon the railways' subsidized and unregulated competitors, to help "Make Chicago the first city in the world."

"Expert" Transportation Views—from Automotive Propaganda

In an editorial in its issue of January 3 the Tribune impugned Chairman Lee of the Interstate Commerce Commission as a transportation expert because he had made an address advocating regulation of highway and waterway carriers. The Tribune, or somebody connected with it, ought to go and get a reputation outside its own office as a transportation expert before it challenges the expertness of the chairman of the Interstate Commerce Commission or any other recognized student of the subject. In its issue of January 4 the Tribune published an editorial entitled, "The Stimulus of Competition," which indicated very plainly the source from which it imbibes some of the "expert" and impartial views regarding transportation which it pontificates. It alleged a "traditional tendency" of the railroads to "halt on each step of progress until every last segment has reached that level." It is significant that the Tribune should have been the first railroad historian outside the automotive industry to have mentioned this "traditional tendency" of the railroads. Continuing, it asserted that it took the railways "twenty years to recognize motor competition, but now that they fully realize that there is a dangerous rival in the field with unlimited possibilities they are responding with air conditioned trains, streamline units, and lowered fares. But they must not stop to standardize, because the virile automotive industry is not going to surrender one inch of advantage without a stiff battle." This serves the dual purpose of implying great initiative and efficiency in the automotive industry and great lack of them in the railroad industry. It will greatly please the automotive industry, because it repeats almost verbatim propaganda disseminated by that industry both to glorify itself and to blackguard the railways for the purpose of preventing federal and state legislation that would establish equality of opportunity in transportation competition.

Why Fair Transportation Competition Is Opposed

Obviously if the automotive industry has been and is so much more efficient than the railway industry, it could compete successfully with the railways on equal terms as regards government subsidies and regulation. Why, then, does not the Tribune answer the

Railway Age's question as to whether it favors government subsidization of other carriers? And why does it refrain from advocating abolition of railway regulation or other changes in government policies that would give the railways and other carriers equal competitive opportunities? The reasons seem obvious. To declare against subsidies in transportation would antagonize the business interests of Chicago and the Mississippi Valley that want big additional government expenditures made upon waterways to enable them to ship more freight largely at the expense of the taxpayers. It would also antagonize the automotive interests because to require buses and trucks to pay reasonable rentals for their use of public property would drive a large part of them from the highways. To advocate actual equalizing of regulation in any way would likewise antagonize both these interests. They do not avow that they want to ruin the railways. They simply want government policies advantageous to themselves that they have not sense enough to know will, if persisted in, ruin the railways, cause government ownership and greatly advance state socialism. Their attacks upon the initiative and efficiency of railway management are a smoke screen to mislead the public regarding the real issues. Their claims that they favor a substantial reduction or abolition of railway regulation prove entirely hypocritical when put to the test.

Illustrating Hypocrisy as a National Vice

Hypocrisy often has been said to be the great American vice. The charge was never supported by any better evidence than that afforded by business interests and their spokesmen that now vociferate against certain parts of the New Deal and at the same time oppose any substantial changes in precisely similar Old Deal policies regarding transportation.

We have cited and commented at such length upon the glaring and grotesque inconsistencies in the editorial policies of a single newspaper because they so well and strikingly illustrate the glaring and grotesque disparities between the government policies ostensibly and actually advocated by a large part of the business men of this country. Beset on one side by the clamor of "liberals" who favored unlimited government competition and spending, and on the other side by the clamor of professed proponents of government budget balancing and private enterprise who advocate every kind of government spending, competition or regulation that they selfishly and fatuously hope will be used to benefit only them, apparently only God and the sober sense of the middle class can save the United States from insolvency and state socialism.

The *Railway Age* began opposing certain New Deal policies when most of those now squawking against them were supporting them for their own special benefit, or refraining from criticising them because of their temporary popularity even with business men. There is one thing, however, that can be said for the socialists, radicals and New Dealers. Most of them are advocating the policies they are because they believe sincerely, however mistakenly, that they are in the public interest, while most of those who oppose the New Deal in business and at the same time defend and advocate continuance of the Old Deal in transportation are doing so because they do not care a hoot for any public or private interest except their own. At a time when not only big business, but the entire system of private enterprise, are under attack the numerous current exhibitions of callous inconsistency and selfishness by leaders and spokesmen of large communities and industries help to make the system of private enterprise exceedingly difficult to defend.

A Noted British Economist on Public Works vs. Private Investment

There has been some increase of activity and reduction of unemployment. But the movement seems to halt, and it has been largely based upon a great public expenditure financed by loans. The stimulant of the currency depreciation, followed by devaluation, seems to have exhausted its effects. In two spheres of policy and development the issue appears especially critical and important. The first is that of private investment. The flow of capital into ordinary business enterprise still seems to be arrested.

This is not for want of available capital. Apparently, it is not in the main, though it may be partly, due to the new legislation and its effect in frightening the issuing houses. It seems to be chiefly due to want of confidence in the prospects of future profits. As the public program expands the issue becomes an especially crucial one.

For while public expenditure is a useful supplement and even a stimulant for private investment during a period of temporary recession, there comes a time when, if private investment does not revive, the public expenditure becomes not a stimulus to it but a new obstacle. If that point is passed, the whole economy of the country becomes increasingly dependent upon an expansion of public expenditure. It is then increasingly difficult either to call a halt without causing a new depression, or without doing so to secure any renewal of private investment. It is impossible to judge from outside just when this critical point may be reached, but it does not seem very distant.

From an Article, "Recovery: The Present Stage," by Sir Arthur Salter in the current issue of the Yale Review.

Norfolk & Western de Luxe Passenger Coach

Norfolk & Western Buys de Luxe Coaches

Air-conditioned cars for through service are fitted with luxurious women's rest rooms and men's smoking rooms—Seats are widely spaced

THE first of 18 new passenger-train cars, in which unusual provision for comfortable and luxurious travel have been provided, was delivered to the Norfolk & Western by the Bethlehem Steel Company at its Harlan plant, Wilmington, Del., on December 11. Two types of cars are included in the order. Ten are passenger coaches and eight, combination passenger-baggage cars. All are equipped with complete air-conditioning service and with unusually complete facilities for the comfort and convenience of passengers. The interior design was developed by the railroad.

Interior of the Men's Smoking Room

In general, the cars are of straightforward construction. Both types are 84 ft. 2¾ in. long over the buffers and the full coach is 74 ft. 3¼ in. inside. They are 9 ft. 11¾ in. wide over the side sheets and 9 ft. 2⅛ in. wide inside. Their principal departure from conventional construction is in the roof which is of the turtle-back type of relatively flat shape. The overall height of the car is 13 ft. $9\frac{13}{16}$ in.—about a foot lower than conventional main-line cars. The coaches weigh 129,000 lb. and the combination cars, when completed, will weigh somewhat less.

Facilities of Unusual Character Provided

The unusual character of the facilities provided in these coaches is indicated on the floor plan. The inclusion of a women's rest room at one end of the car and a smoking room at the other cut down the length of the main compartment of the cars to 46 ft. 5 in. Within this space are arranged 11 double seats on each side to provide seats for 44 persons. These seats are of the rotating, reclining-back, bucket type, with separate control of the back adjustment for each of the two occupants. These seats are spaced 47 in. apart so that the occupants of two facing seats are not annoyed by mutual interference. The seats are upholstered in a special figured plush, in the background of which is a soft green conforming to the general interior color scheme.

The walls of the passenger compartment are finished in two soft tones of green and the ceilings are finished in cream. The floors are covered with rubber tiles of a variegated design and tone to harmonize with the walls and upholstery.

The silk facing of the Pantasote curtains also harmonizes with the other features of the interior finish and the curtain fixtures are chromium plated with a

satin finish which matches the natural satin finish of the aluminum parcels racks.

The ladies' rest room is furnished with a lounge, two comfortable chairs and a vanity chair. The upholstery is in figured Mozette of the same general tone as the upholstery in the main passenger compartment. The men's smoking room at the opposite end of the car is furnished with a sofa and four chairs. These are upholstered in genuine leather of a soft dark shade of green.

A cabinet type water cooler and paper-cup dispensers are placed in the corridor opposite the car door at each end of the car.

The Women's Rest Room

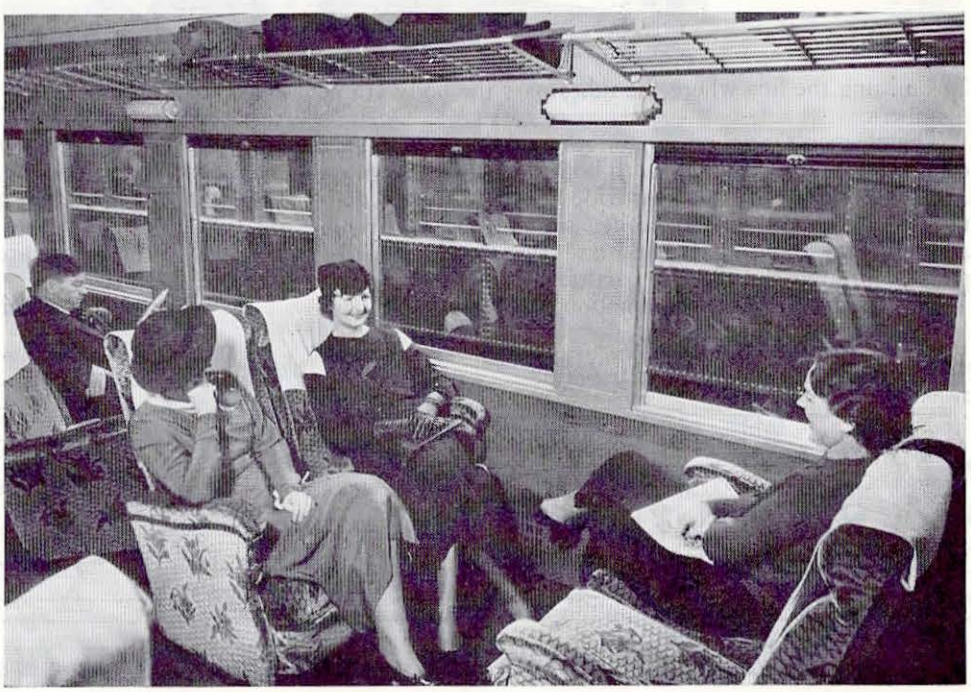
Lighting and Air Distribution

As is clearly shown in the illustrations, the ceiling of the car is made in three parts, the center being separated from the two sides by chromium-plated, curved reflector channels within which the ceiling lights are concealed. In each of the two chromium-plated reflector channels in the passenger compartment are forty 25-watt lights. These are supplemented by I'Image lighting fixtures placed below the baggage racks and over each alternate window post. Each of these fixtures contains a 40-watt light with long filament so that the illumination is uniformly distributed through the translucent glass of the fixture. The result is a light distribution remarkably free from shadows, with an intensity of about eight foot-candles at reading height.

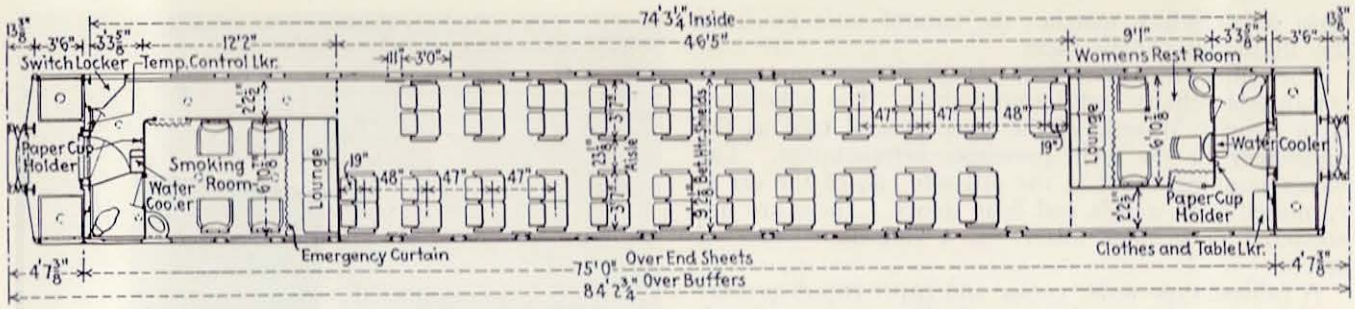
The air-conditioning units are mounted over the ceiling in the corridor at the smoking-room end of the coaches. The air from the units is blown into a conduit occupying a space about 3 ft. wide by approximately 8 in. deep over the center portion of the ceiling and between the ceiling-light channels. The distribution is controlled by restricted slots at the sides of the duct where the air leaves to enter the moldings under the two lighting channels. This restriction causes the air to flow out through the step openings on the inner side of each molding in soft streams which mingle with the air in the car without detectable drafts.

Refrigerating equipment of three types has been applied on the cars in the order. Four of the coaches are equipped with Safety-Carrier steam-ejector equipment and the other six with the Frigidaire mechanical-compression system. The eight combination passenger-baggage cars are provided with Westinghouse-Sturtevant equipment. The coach systems are designed to furnish 2,000 cu. ft. of free air per min., 500 cu. ft. per min. of which is fresh air. In the passenger-baggage cars 1,000 cu. ft. of air is provided for the passenger space. In this case, because of the relatively large space in which smoking is permitted, more than 25 per cent of the circulation is fresh air.

The heating coils in the air-conditioning unit are designed to provide the full heating effect for outside

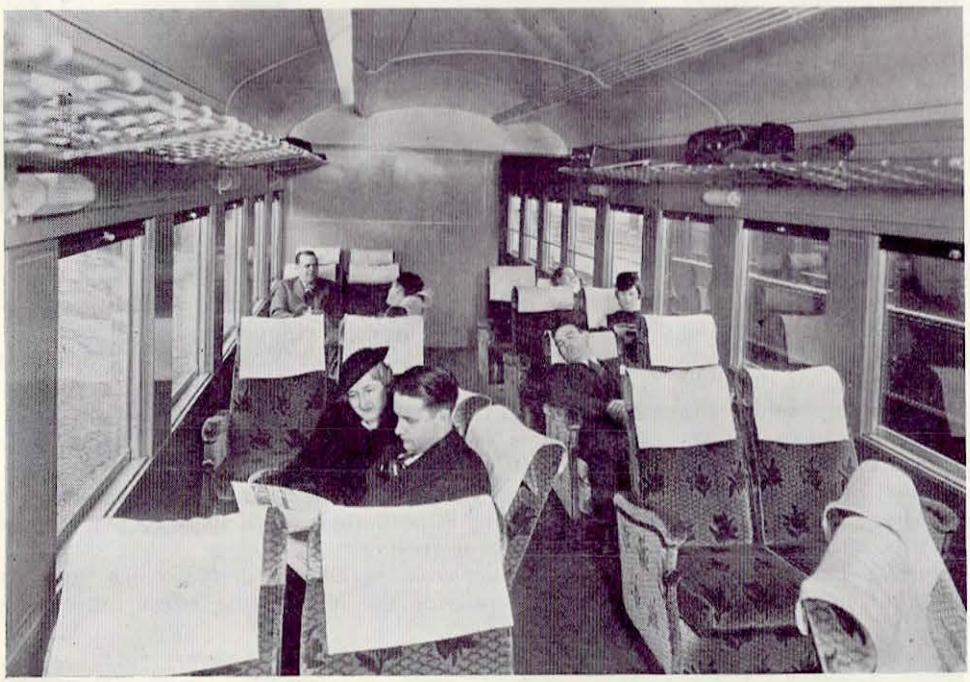


The Widely Spaced Rotating Seats Have Individually Controlled Reclining Backs



Floor Plan of the Norfolk & Western Passenger Coaches

temperature as low as 50 deg. Additional heat is provided through fin-tube radiation along the side walls. The inside finish below the windows is sloped out slightly toward the floor to provide room for the radiators and is perforated to permit circulation of the air over the radiators and into the car. This compact arrangement of sidewall radiation has been made possible by omitting the fins where the tubes pass the body frame members.

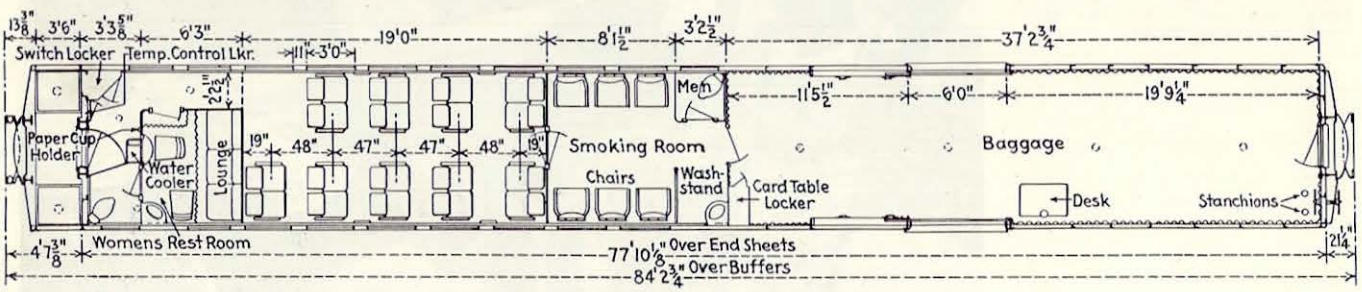


The Ceiling Lighting Is Indirect—Air Is Distributed Through Molding Grilles Below the Lighting Channels

The women's rest room and the smoking room are each fitted with a lavatory with both hot and cold water. Flushing toilets are also provided. Paper-towel containers are placed on the toilet side of the rest-room and smoking-room partitions, and the towels are dispensed through slots in the partitions.

The interior of the combination passenger and baggage cars is arranged with a baggage compartment 37 ft. 2¾ in. long at the front end. Across the entire width of the car behind the baggage room is a smoking room, 8 ft. 1½ in. long, with chairs to seat six persons. Next to the baggage room is the men's toilet on one side of the car and a washstand in an open alcove on the other. Behind the smoking room is the main passenger compartment with seats for 18 persons. A small rest room for women, with side corridor communication between the main passenger compartment and the vestibule, is placed at the end of the car. All interior decorations, upholstery, toilet accessories, etc., including methods of lighting and air distribution, for the passenger facilities in these cars are duplicates of the similar equipment in the coaches.

An unusual feature in these cars is the use of 110-



Floor Plan of the Norfolk & Western Combination Passenger-Baggage Cars

volt electric current for lighting and air conditioning. Last summer, with the introduction of air-conditioning service on the N. & W., the 32-volt power supply was abandoned in favor of the 110-volt system on the cars fitted with air-conditioning facilities. For operation of these facilities the N. & W. considered the requisite battery capacity to be at least 30 usable kilowatt hours. Continuing the 32-volt system would have required the rebuilding of practically all of the yard charging facilities on the railroad. It would have required increasing the size of copper in the car circuits and about three and one-half times as much ampere-hour battery capacity would have had to be provided.

The coaches are, therefore, equipped with 110-volt electric systems which permit the use of the present charging lines, and car wiring and which make available for use in the cars 110-volt lamps, motors and other appliances which are readily obtainable. The weight and size of the large-capacity generators are also kept down and the standard car-lighting cells, with the number increased in proportion to the increase in voltage, can be continued in use since there is little or no change in the ampere-hour battery capacity required.

With the exception of the four coaches equipped with the Safety-Carrier air-conditioning system, both types of cars are equipped with Safety 15-kw., 120-volt generators, with the Dayton-Roderwald drive. The four cars with steam-ejector type air-conditioning are fitted with Safety 10-kw., 120-volt belt-driven generators. The type and capacity of the batteries are shown in the table of special equipment.

The cars are fitted with Commonwealth four-wheel trucks with 5½-in. by 10-in. journals. Waughmat rubber inserts have been included to reduce the effect of road vibration and noise in the interior of the cars.

Special Equipment on the N. & W. Coaches and Passenger-Baggage Cars

Truck frame	General Steel Castings Corp.
Truck brake	American Steel Foundries, Clasp
Rubber inserts	Waugh Equipment Co., Waughmats
Vestibule trap doors	O. M. Edwards Co.
Diaphragms	Morton Mfg. Co.
Air-brake equipment	Westinghouse Air Brake Co.
Fin tube radiators	Vapor Car Heating Co.
Ceilings	Masonite Corp.
Body insulation	Johns-Manville Corp., Salamander
Floor support	Morton Mfg. Co., Chanarch
Car floor	Tuco Products Corp., Tucolith
Floor covering	Goodyear Rubber Co., Rubber tile
Window fixtures	National Lock Washer Co.
Curtains	Pantasote Company, Inc.
Seats	Heywood-Wakefield Co.
Chairs, ladies' lounge and smoking room	Strawbridge & Clothier
Seat upholstering	L. C. Chase
Flush toilets	Dayton Mfg. Co.
Lavatories	Standard Sanitary Mfg. Co.
Soap dispensers	West Disinfecting Co.
Water coolers	Henry Giessel Co.
Hardware, baggage racks, tail gates	Adams & Westlake Co.
Lighting equipment, includ. side fixtures	Safety Car Heating & Lighting Co.
Storage batteries	Edison Storage Battery Co.
	4 coaches — 88-cells, A-4h
	6 coaches — 88-cells, A-8h
	8 pass.-bagg. cars — 88-cells, A-6h
Generator drive	Dayton-Roderwald—14 cars
Generators, electric	Safety Car Heating & Lighting Co.
	4 — 10 kw.
	14 — 15 kw.
Air-conditioning equipment	4 coaches — Safety-Carrier, steam ejector
	6 coaches — Frigidaire, mech. compression
	8 pass.-bagg. cars — Westinghouse-Sturtevant.

Freight Car Loading

WASHINGTON, D. C.

TOTAL revenue freight car loading for the year ended December 29, 1934, was 30,785,594 cars, an increase of 1,565,542 cars, or 5.4 per cent, as compared with the total for 1933 and of 2,605,642 cars as compared with 1932. Total loading by commodities in 1934 as compared with 1933 was as follows:

	1934	1933	Per Cent Increase
Grain and Grain Products	1,641,732	1,660,416	1.1 % dec.
Live Stock	1,074,005	886,819	21.1
Coal	6,084,406	5,694,644	6.8
Coke	334,751	298,257	12.2
Forest Products	1,147,096	1,100,817	4.2
Ore	794,663	743,206	6.9
Merchandise, L. C. L.	8,244,182	8,445,635	2.4 % dec.
Miscellaneous	11,464,759	10,390,258	10.3
Total	30,785,594	29,220,052	5.4

For the week ended December 29 the total was 425,120, a decrease of 29,545 cars as compared with the corresponding week of last year but an increase of 19,819 cars as compared with 1932. Decreases as compared with last year were reported as to all commodity classifications except ore, which showed a slight increase. The summary, as compiled by the Car Service Division of the Association of American Railroads, follows:

Revenue Freight Car Loadings

Week Ended Saturday, December 29, 1934

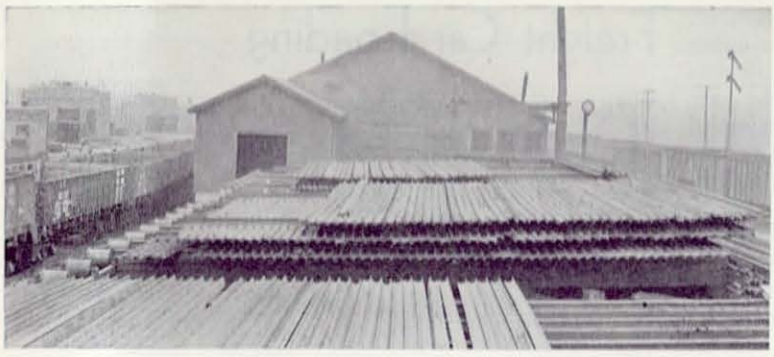
	1934	1933	1932
Eastern	102,117	105,766	95,626
Allegheny	82,454	91,187	79,692
Pocahontas	29,535	30,908	29,645
Southern	60,948	67,203	60,020
Northwestern	48,527	51,718	44,198
Central Western	66,207	70,340	60,088
Southwestern	35,332	37,643	36,032
Total Western Districts	150,066	159,701	140,318
Total All Roads	425,120	454,765	405,301
Commodities			
Grain and Grain Products	17,946	20,403	21,982
Live Stock	11,358	11,705	13,375
Coal	107,478	116,185	98,985
Coke	5,993	7,142	4,311
Forest Products	11,782	11,807	9,445
Ore	2,196	2,107	1,433
Merchandise L.C.L.	119,963	124,708	127,028
Miscellaneous	148,404	160,708	128,742
December 29	425,120	454,765	405,301
December 22	547,895	531,464	494,510
December 15	579,935	559,419	515,769
December 8	551,011	541,992	520,607
December 1	488,118	499,596	547,095
Cumulative Total, 52 Weeks	30,785,594	29,220,052	28,179,952

The freight car surplus for the first two weeks in December averaged 397,663 cars, an increase of 16,308 cars as compared with the number in the last part of November. The total included 226,940 box cars, 122,533 coal cars, 23,735 stock cars, and 9,609 refrigerator cars.

Car Loading in Canada

Car loadings in Canada for the week ended December 29 totaled 29,334 cars, as against 29,360 cars for the last week of 1933 and 41,114 cars for the previous week, according to the compilation of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
December 29, 1934	29,334	17,142
December 22, 1934	41,114	21,352
December 15, 1934	43,367	21,644
December 30, 1933	29,360	14,231
Cumulative totals for Canada:		
December 29, 1934	2,319,936	1,101,542
December 30, 1933	2,031,970	954,905
December 31, 1932	2,175,625	972,961



These Rails Had to Be Removed from Track Because of Damage to the Ends, Although They Had Suffered Little Wear Throughout 90 Per Cent of Their Length

Can We Expect Better Rails?*

An account of recent developments in manufacture that should insure improved service in track

By J. R. Mooney,

Assistant Manager, Rail and Fastenings Dept., Robert Hunt Company, Chicago

THE history of railroading in this country has been one of gradually increasing loads and gradually increasing weight of rail. As the size of the rail has been increased, the carbon content has also been increased until, with the adoption of the A. R. E. A. rail specification of 1925, we were getting rails with 0.89 carbon. Many have felt that this carbon content is too high and this was recognized in the 1933 specification by a lower carbon content for the heaviest rails.

The increase in loads that has been going on for many years may possibly be halted now, but the increase in speeds is becoming accelerated and the pressure for longer life at less cost has been increased, due partly to the enforced economy of the times and partly to natural progress.

Development in all classes of steel products has been much the same. First, the carbon content which gives the best results is arrived at by experience. When this has been done and further improvement of the product is demanded, heat-treatment or alloys, or sometimes both, are resorted to. We have already obtained the maximum benefit from carbon in our rails and we must now turn to heat-treatment or the alloys.

The Ends Need Attention

When we consider the behavior of a rail in track, it is apparent that the ends are most in need of a superior metal. In tangent track the ends of a rail batter down and are welded up sometimes many times before the middle portion of the rail is worn out. It is this necessity for improving one particular part of the rail that has resulted in the use of heat-treatment rather than alloys. Alloys necessarily affect the rail from end to end and all parts of the section, while heat-treatment can be applied locally where it is needed.

The process of hardening steel by heat-treatment is simple. Heat it to a red heat, quench it and it is hard. If it gets too hard, you can either quench it at a slower rate or you can temper or draw the hardness by a second heating after the quenching. These two operations, quenching and drawing, are the basis of all heat-treatment for hardening not only rails but all kinds of steel.

Hardening Rail Ends in Track

Some of the railroads have been hardening the ends of their rails in track by using either a flame or an electric arc for heating the steel, and generally water or oil for quenching it. Sometimes the quenching is adjusted so that the desired hardness is obtained without further treatment and sometimes the hardened ends are drawn or tempered by a second heating to a lower temperature. The results obtained from rails with the ends hardened in track have proved that this is a very good way to lengthen their life at a cost that is well below the savings made, so there is a very considerable net gain.

This hardening should be done before there is any batter, but experience so far indicates that this cannot be done. Initial batter occurs very quickly, and on heavy-traffic lines it develops before the heat treating gangs get to the rail. One can appreciate the difficulty of following up simultaneous rail laying at several different points. This naturally led to the idea of hardening the ends before the rails go into track, and some of the rail mills are now prepared to do end hardening on a portion of their rail production.

Harden Rail Ends at the Mill

The methods of hardening used in the mill differ somewhat from those used in track, although the fundamental principles of quenching and drawing are the same. When the rolling of a rail has been completed, it is put on a bed to cool. When it comes to this bed, the temperature is high enough so that quenching of the ends will harden them, and the heat from the unquenched portion of the rail will re-heat the quenched part and temper it. The quenching is done by fitting a shoe over the end of the rail and directing a stream of water, or water and air, or sometimes just air, against the top of the head of the rail. It takes but

* Abstract of a paper read before the Maintenance of Way Club of Chicago.

a few minutes for this quenching, the exact time depending upon the medium used for quenching and on the hardness desired. This method of using the natural heat of the rails requires that the quenching be done before the rails have cooled. To treat in this way all the rails rolled will require extensive equipment and quick work, but I believe that the rail manufacturers can solve the problem satisfactorily.

In another way of hardening rail ends in the mill, the process is not applied until the rails have cooled. They are then put into a machine in which the heads of the rails are subjected at the end to electrical resistance heating. After heating, they are taken out of the machine and quenched with a suitable medium. This process has some advantages over that first described in that the heat-treating can be done at any time and rails that have to be cut back to shorter lengths at the cold saw can be delivered with hardened ends just the same as full-length rails. This is, of course, impossible when the rails are hardened on the hot beds.

Good Results from Both

The distribution of hardness produced by the two methods is somewhat different because ends hardened on the hot bed are first hardened and then drawn, while the hardness of the ends treated by electric heating is controlled at present by the rate of quenching, and there is no subsequent re-heating. So far as we know now, both methods will give good results in service.

The merits of hardening rail ends in track appear to have been demonstrated, and I believe it has also been shown that the job can be done satisfactorily in the mill. The cost of doing the work in the mill should be less than in the field and I think that the installation of sufficient equipment to handle the entire output in our mills is only awaiting a demand from the railroads.

There may come a time when the rail ends will last so long that they will out-wear the middle portions of ordinary rail. When this time comes, we will have to look about for ways of increasing the life of the entire rail. We can resort to heat-treatment and three rail manufacturers have already experimented with processes for hardening the entire rail section from end to end. Some experiments have also been made with alloy steels. These are both possibilities, and I believe that when the need arises, we will be able to produce rails that are much harder and tougher throughout than those now produced, but considering the life we are now obtaining from our rail ends, there seems to be no justification yet in trying to improve the wearing qualities of the middle of the rail for tangent-track service. For certain curves and other heavy-duty purposes rails hardened throughout, and alloy rails can be used to advantage, and I understand some of the mills will furnish them now.

The Quest for Better Steel

When I first mentioned heat-treatment, I may have given the impression that heat-treatment implies the hardening of steel. This is not true, as you will readily perceive when you consider that annealing is a form of heat-treatment that is designed to soften steel. I make this explanation here because in recent years, rails have been heat-treated with an object other than hardening them. I refer to the various processes for eliminating shatter cracks in rails.

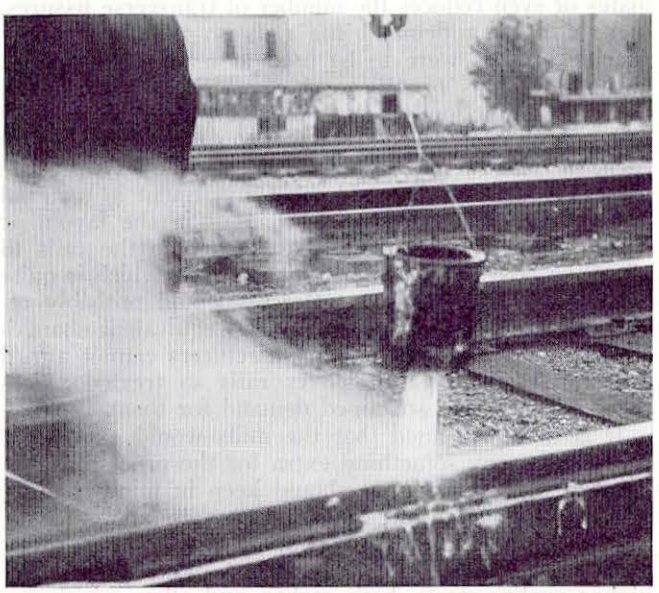
For some time, many of us suspected that the nucleus of a transverse fissure was a shatter crack and we have known for some time that there are shatter cracks in some rails when they leave the mill. In view of this, it was only natural that attempts should be made to eliminate shatter cracks at the mill. In the summer of 1931, I. C. Mackie, engineer of tests at the Dominion mill in Nova Scotia, found that he could eliminate shatter cracks in rails by subjecting them to a prolonged cooling process. His plan is to take the rails from the hot bed while they are at a temperature of about 650 deg. F., pack them into a completely enclosed steel box that holds about 100 tons of rails, and allow them to cool to about 100 deg. above the atmospheric temperature. This takes some 24 hours. He found that rails treated in this way do not contain shatter cracks, while rails from the same heat and even from the same ingots, cooled in the ordinary way on the hot beds, sometimes do contain shatter cracks. Mr. Mackie's process is, as far as I know, the first successful method of eliminating shatter cracks. I say "successful" because we haven't heard of any shatter cracks being found in rails so treated, and officers of the Canadian Pacific and the Canadian National think so much of the process that they specify that all of the rails they purchase from Canadian mills shall be so treated.

Do not get the impression that the Mackie process is annealing. It is not. The slow-cooling starts at temperatures too low to result in annealing. The only effect on the rails other than the elimination of shatter cracks, so far as we have been able to determine, is a very slight softening, amounting to just a few points Brinell and a slight increase in the toughness of the steel, as evidenced by the number of blows required to break the drop-test pieces.

About 4,000 tons of rails treated this way have been in tracks of the Canadian Pacific since the fall of 1931—about three years. Large quantities have been in service for shorter periods. It will not be long before we will have service results which will throw considerable light on the relation between shatter cracks and transverse fissures, and the value of the Mackie process.

Other Processes

We have had experience in this country with other processes designed to accomplish the same result. One of these is the Sandberg process as applied at the Lackawanna plant of the Bethlehem Steel Company. This is not the familiar Sandberg Sorbitic process for hardening the running surface of the rail. In the process for eliminating shatter cracks, the rails are pulled up

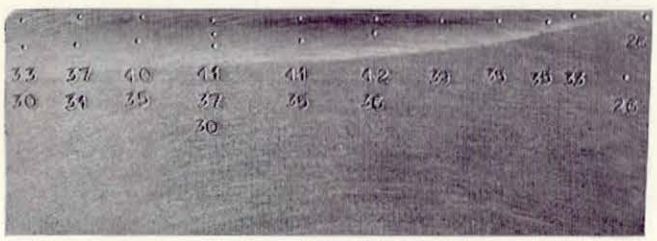


One Method of Quenching Employed in Heat-Treating Rail Ends in Track

on a special hot bed, over which is built a sort of gas-heated furnace. The rails go into this furnace at a temperature of about 1,000 deg. F., stay in there about one hour and a half and come out at a temperature of about 450 deg. F. A somewhat similar process has been tried at the Steelton plant.

Another process is the normalizing process used at Gary. Here, the rails go onto the hot beds where they are allowed to cool until they have passed through the critical range, which means that they have cooled to about 1,000 deg. F. Then they are put into a furnace where they are heated to 1,500 deg. F., and after they have become thoroughly heated to this temperature, they are replaced on the hot beds and allowed to cool in the normal way. At the plant of the Inland Steel Company, a process similar to the Mackie process is used.

We have had little experience with rails treated by these other processes. The real test is service, and although a number of railroads have small trial lots of these rails in track, it may be several years before we can get any definite information, particularly if no fissures develop. Then it will be necessary to experiment with larger quantities because the small lots now



Longitudinal Section Through the Head of Rail that Has Been Heat-Treated at the End, the Figures Indicate Rockwell Hardness

in service might have given good service without any heat treatment. In this respect, the Mackie process is far ahead of the others and we must be careful not to judge one process by results from any of the others.

What Is Involved

Of course, the railroads are vitally interested in transverse fissures, and if it appears that any of these processes eliminates shatter cracks and by so doing, eliminates or even reduces the number of transverse fissures, there will be a demand for rails so treated. If the Mackie process were to be used at a mill turning out a thousand tons of rails a day, which is perhaps the average production of our American mills when they roll rails, it would require ten boxes, holding 100 tons each, to treat the entire output of the mill. To provide these would entail a considerable investment in material and would require extensive changes in the layout at the finishing end of the mill to distribute the rails to all of the boxes at the proper temperture, which is quite important. As the other processes would probably require about as much equipment and equivalent changes in the mill layout, the rail manufacturers cannot afford to equip their mills to deliver rails so treated unless there is a real and sustained demand for them.

It is to be assumed that the mills would expect the railroads to pay something extra for the process. Considering this, I think we should keep in mind that we should expect the rail manufacturers to apply to the manufacture of rail steel the knowledge of steel which has been acquired in recent years. The demand for higher quality steels, both carbon and alloy, which has been made by other industries, has been met so successfully by the manufacturers that in many instances what was up-to-date five years ago is entirely out of date today. We now know that there are vast differences between heats of identical chemical composition, and considerable is known concerning methods of detecting these intangible qualities and controlling them. This knowledge is being extended rapidly, and I think we should expect it to be applied to the making of rail steel. This may result in a year or two, in rails being turned out substantially free from shatter cracks, and this without any slow cooling process.

Some of the slow cooling processes may prove effective in reducing transverse fissures, but we won't know this for some time, particularly in the case of those that have not been extensively used. In the meantime, we should not neglect other possibilities.

President Plans One Agency To Regulate All Transport

WASHINGTON, D. C.

LONG-POSTPONED transportation legislation, to some extent at least along the lines of that which has been advocated by the railroads for several years and which has been under study by Co-ordinator Eastman and other representatives of the government, was specifically made a part of the Administration program for the Seventy-Fourth Congress by the President's address before a joint session of the Senate and the House on January 4. Only part of one sentence was devoted to it, because the President expects to send up a special message on the subject later, probably after Co-ordinator Eastman's forthcoming report, together with the Interstate Commerce Commission's comments on it, has been made public, but it was given first place among the "other measures of national importance" which were outlined after the discussion of the $4,000,000,000 public works program which was the main topic of the address.

"Among the subjects that lie immediately before us," the President said, "are the consolidation of federal regulatory administration over all forms of transportation," and several others that also are to be covered in separate messages. The President also mentioned the elimination of grade crossings as part of the public works program by which he proposed to give employment at something less than standard wages to the three and one-half million employable people now on relief, although no indication was given as to the amount which it is proposed to expend for this purpose. Careful studies have been made as to the amounts which might profitably be used in this way but a detailed itemization of the entire public works program still awaits a good deal of further study and planning.

Consolidation of Regulatory Functions

"Consolidation" of federal regulatory functions in relation to all forms of transportation implies first the extension of federal regulation to certain forms of carriers to which very little of it has thus far been applied, such as the highway motor vehicles operating in interstate commerce and the carriers operating on inland waterways and in coastwise and intercoastal service, but it is likely that the passage through Congress of a comprehensive administration bill for such a plan would be somewhat smoother than that of separate bills pertain-

(*Continued on page 51*)

Oral Arguments in Rate Case

Railroads ask that patrons share portion of increased operating expenses

WASHINGTON, D. C.

ORAL arguments on the petition of the railroads for authority to make increases in freight rates averaging about 6.7 per cent, which they estimate would add approximately $170,000,000 to their revenues, and which they declare is necessary to enable the railroads to survive in the face of an era of mounting costs, were begun before the Interstate Commerce Commission on January 9 and were expected to consume a week. Most of the Commissioners had not heard the testimony, amounting to 6,515 pages of transcript, with 474 exhibits, as most of the hearings were held before Commissioner Aitchison and examiners, although Commissioners Tate and Mahaffie conducted some of the hearings outside of Washington.

The first day was devoted to the argument of counsel for the railroads, who emphasized that they were asking the shippers to share only a part of the estimated increase of $290,000,000 a year in their operating expenses, resulting from higher wages and prices they must pay, and who asserted that denial of the petition would be especially disastrous to the credit of the railroads because it would amount to a declaration that they are prohibited by law from applying to their business the same economic law under which manufacturers and other businesses are allowed to increase prices as costs of production are increased. On the basis of returns for 11 months it was estimated that the railroads would have a net deficit after fixed charges of not less than $65,000,000 for 1934, and that, taking the United States as a whole, whereas in 1929 only 4 per cent of the railroads, measured by mileage, operated at a loss and 96 per cent at a profit, in 1933, 58 per cent operated at a loss. Time amounting to over 18 hours had been asked by counsel for shippers, state commissioners, and others and more than 130 briefs had been filed during the week before the argument. The railroad argument as stated in the brief was in part as follows:

We are anxious at the outset to make it very clear that the commission need not concern itself, except in a rather casual way, with nice questions as to the value of the property and what constitutes a fair return. In this critical period, the railroads are asking for a sum of money which may be applied to their increased operating expenses, in the hope that favorable legislation by Congress and improved business conditions will enable them to make up the balance through the operation of economic forces. It is desirable at the outset to lay emphasis upon the fact that the case now before the commission is what may be called a revenue case, as distinguished from a rate case.

Reasonableness of the Proposed Rates

Here no effort is being made to secure a fair return upon property investment or upon the value of the property as found by the commission. The only purpose is to secure something like 60 per cent of the increase in actual operating expenses due to the increase in the cost of materials and the restoration of the wage scale.

Under these circumstances, we insist that the reasonableness of the rate structure which will result is shown by the need of revenue to meet actual operating expenses. The courts and this commission have very generally recognized that the standard of reasonableness of rates is the necessity of the carriers, where operating efficiency has been proven or is taken for granted.

It is shown in the petition that under present conditions the railroads are earning a return of 5¾ per cent on only 38.80 per cent of the value of their property, as that value is determined by taking Ex Parte 74 values and readjusting them so as to bring them down to date.

The petition shows that an increase of $290,000,000 per annum in the operating expenses of the railroads will jeopardize the solvency of a very large number of important railroad systems.

The percentage of decline in average revenue per ton-mile, comparing 1921 to 1933, is 21.65 per cent for the United States. The greatest decline was in the Western district and the least in the Southern region. It may be interesting to compare 1929 with 1933. It will be seen that whereas the decline, as stated, in 1933 as compared with 1921 was 21.65 per cent, the decline in 1929 was 15.61 per cent.

If there had been in effect in 1933 the same rate basis that was in effect in 1921, the railroads would have had freight revenue (assuming that the same amount of traffic was handled) which would have been greater by $687,856,000. Due to the steadily declining returns measured by average revenue per ton-mile, the railroads have suffered a loss of $8,500,000,000 for the years 1922 to 1933.

We are not contending that these figures give an altogether accurate picture of the situation. It is freely conceded that many of the decreases in rates were due to the voluntary action of the carriers, on account of competition with unregulated forms of transportation. However, the fact remains, for whatever it is worth, that if there had been in effect throughout the period 1921 to 1933 the same rate base that prevailed in 1921 and if the railroads, under these conditions, had carried the same amount of traffic which they actually did carry, there would be no acute railroad problem at the present time. An addition of $687,756,000 to the freight revenue of the carriers in 1933 would have enabled the railroads, as a whole, to meet their fixed charges without difficulty and left a comfortable margin to strengthen railroad credit.

Proposal Will, in Fact, Increase Revenues

Many shippers have advanced the argument that the rate basis proposed will be so high as to stifle industry, or, if this does not result, traffic will be driven to the trucks and the waterways, to the detriment of railroad revenues.

We think the record amply demonstrates the contrary. It will be remembered that the leading traffic executives of the country, acting in co-operation with practically all of the traffic experts in the service of the railroads, have agreed that the rates proposed will substantially increase rather than reduce revenues. These traffic men were left free to exercise their own judgment as to just how this desired result might be brought about. The proposal before the commission has been carefully considered, therefore, for several weeks, with only one end in view—that being the purpose to increase the revenues.

The men who handled the matter are familiar with traffic conditions upon their own lines and with traffic conditions that prevail generally throughout the country. They certainly have no desire to destroy their own properties and they are under no orders, either from their own executives or from financial interests, wherever located.

They have submitted a proposal which recognizes the intensity of truck and water competition. It is recognized that some traffic will be lost to the carriers by reason of this very moderate increase, but, on the whole, the traffic men are quite convinced that the scheme proposed will improve the present desperate revenue situation of the carriers.

It would seem that the experience of the country under the codes must lead inevitably to the conclusion that an increase of freight rates, amounting to no more than 6.7 per cent, will not drive the traffic away from the railroads, nor result in its being stifled and, therefore, unable to move at all. We say this for the reason that this record shows, beyond question, that the selling price of commodities generally has been substantially increased within the last twelve months, without preventing the free movement of the traffic in increased volume.

It will be remembered that in Docket 26,000, when a demand was made upon the carriers for reduction in rates, particularly on heavy commodities, the shippers insisted that they could not continue to pay the freight rates they were then paying and

hope for any substantial recovery in industry. This demand of the shippers was denied by the commission and yet we entered upon an era of higher prices and much larger production.

It will be seen from many statements in the record, particularly that of the secretary of the National Coal Association, that there have been very substantial increases in coal prices and yet the volume of movement has, on the whole, been higher than it was when the prices were lower. It is simply impossible to accept a theory that increases varying from 3c to 30c per ton will destroy an industry which has lately been able to advance its prices all the way from 35c to $1.00 per ton.

Along the same line, it should be well to consider that while freight rates remain substantially constant, there are many fluctuations in selling price—these fluctuations amounting, in many cases, to more than the freight rate itself.

While we think that the record overwhelmingly demonstrates that the proposed increase in rates will improve railroad revenues so sadly in need of improvement, we urge upon the commission the proposition that if the matter were doubtful, it would be the duty of the commission to permit the railroads to exercise their judgment and that of their executives and traffic managers in selecting the method for increasing revenues.

This is true, both as a matter of law and a matter of sound policy. The courts and this commission have many times declared that they are not either the general nor the traffic managers of their railroads and that it is not the function of this administrative body to assume purely managerial duties.

It should be remembered, in this connection, that the commission is not called upon, in the public interest, to deny the rate increase. It is clear that the need of revenue is itself sufficient to establish the reasonableness of the rates. These rates being reasonable in and of themselves, it is the duty of the commission, as we conceive it, to allow the proposals to become effective, unless some injury would thereby be done to the shipping public.

Those who protest against the increase insist that there will be no increase in revenue because they, the protestants, have available and will employ other forms of transportation. This means, if it means anything, that the shippers need not pay the increased rates unless they prefer to do so, since they have available for their use trucks and boats which are willing to carry their traffic at rates lower than the railroads propose. No harm can come, therefore, to the shippers as a result of the proposed increases. For that reason, the public interest, in so far as it is measured by the welfare of the shippers, is not involved.

If the commission denies the increase, there is no way by which the correct theory can be tested. On the other hand, if the increase is allowed and experience demonstrates that the result is a substantial loss of traffic, there will be no difficulty in correcting the situation by reducing the rates. In fact, those who are responsible for the policies of the railroads can certainly be depended upon to protect their revenues in this way.

However, if they should be so obdurate as to reject such a method of securing the needed money for expenses, the commission would have the power to reduce the rates at any time and thereby save the railroads from the consequences of their folly. There is no cure, however, if the commission sees proper to exercise its judgment and reject that of railroad management with respect to the best way in which to meet this added burden of expense.

It is not contended by the carriers that later and individual adjustments may not be necessary in special cases. The railroads are dealing here with a general advance cast, resting upon the imperative need for revenue. It is impossible, as the commission has frequently recognized, to consider each individual rate in great detail. It may be necessary, of course, to make some adjustments and the carrier may be depended upon to protect its revenues by suggesting such changes in rates as conditions in the light of experience, justify.

The testimony given by numerous witnesses in support of the contention that the proposed increases would drive traffic away from the rails is somewhat lacking in consistency. Some witnesses prophesy a wholesale diversion of traffic from the rails and, at the same time, show that their own business would be injured by reason of the increased cost of transportation. They attempt to make out their case by applying the proposed increases on each commodity to the total tonnage of that commodity shipped or received by them for the past year. In some cases they estimate their increased expenses by assuming a greater tonnage than they have had, it being their thought that improved business conditions will increase their business.

It may be worthwhile to mention the evidence offered in this case by the Secretary of Agriculture. He advocated a system of rate making under which the rates would fluctuate, not over brief periods, but over some reasonable period, as commodity prices rise and fall and in accord with the general economic conditions. We respectfully submit that these views are not in accord with the established rate making principles so often announced by the commission.

Conclusion

In conclusion, we may mention briefly the contention advanced in this case by numerous shippers that the railroads should find a solution of their problem by a wholesale scaling down of railroad obligations. In view of the fact that there has been practically no return to the stockholders in the period of depression, this must mean that the railroads should be required to repudiate their debts to their bondholders. Numerous witnesses appearing for various interests ventured the opinion that there should be launched a plan for wholesale repudiation of obligations.

These obligations were incurred through the process of borrowing money to construct and improve facilities. It is said that many of these facilities are obsolete and that the shippers should not be required to pay rates which would yield sufficient money to meet the interest on funds borrowed to purchase property not now necessary for efficient transportation.

There are numerous reasons why such a theory is unsound. In the first place, the carriers are asking for a very moderate increase and, if it is granted and if their hopes are realized, it is shown that they will have a return upon no more than one-half of the value of their property. Certainly no one can contend that more than half of the railroad property is obsolete.

In the second place, it is not true that any great amount of railroad property is no longer used and useful. It may be true that the property is not used to its full capacity, but this is the result of the depressed condition in business, coupled with the loss of traffic to unregulated forms of transportation, which loss is attributable to the fact that the railroads have not been able to compete, owing to the restrictions placed upon the railroads and the freedom of action accorded to their competitors, coupled with government subsidies. However, it is necessary to maintain terminals, tracks, station facilities and the like to handle a reduced volume of traffic. In other words, because traffic has fallen off 50 per cent does not argue that 50 per cent of the property is no longer needed.

In the third place, it is highly important that railroad credit should be preserved, if at all possible. This is particularly true at this time, when the industry is undergoing a transformation, due to altered economic conditions, which will make it necessary to spend large sums of money in buying new equipment of a different type from that now in use, the employment of which will necessitate improved maintenance conditions.

If the railroads are to regain their passenger traffic, they must speed up their trains and embark upon an extensive program of air-conditioning. In addition to increasing the speed of the trains, they must operate them at lower cost. This may mean lighter and faster trains, but it is clear that the speed of the passenger trains cannot be greatly increased without improving track maintenance conditions.

All this will cost money. It is impossible for the railroads to adopt anything like a constructive policy, except upon the theory that large sums of money may be obtained from the investing public for extensive improvements. To secure this money railroad credit must be maintained. How can anyone seriously argue that a policy of wholesale repudiation of bonded obligations will not so shatter the credit of the railroads as to make it impossible for them to secure, for a long time at least those fresh supplies of capital so essential to maintaining their position as the principal transportation agency of the country?

In the fourth place, railroad credit would not be improved by reducing fixed charges at this time, even though the railroads could escape the odium of having repudiated their obligations. We say this for the reason that the real trouble at the present time is the narrow margin between gross and net. This margin has sometimes been referred to as the factor of safety.

The statistics indicate that at the present time this margin of safety is in the neighborhood of 10 per cent. This means that a decrease in the gross of 10 per cent, or an increase in operating expenses of approximately the same amount, will wipe out the net entirely. A 10 per cent fluctuation, either in gross or net, is not an extravagant variation. It may occur at almost any time. It is clear that the investing public will have misgivings as to the soundness of a business where the margin of safety is so small a margin—so slender, indeed, that it may be wiped out almost any year by unanticipated fluctuations either in business or in the wage scale.

The problem of railroad credit is the problem of increasing the margin of safety. Obviously, this can be brought about only by increasing the gross revenue or decreasing the factor of expenses. The effort here is to increase gross revenue by a moderate amount.

We submit, therefore, that railroad credit will be strengthened by this increase in revenue much more than it would be by any reduction in fixed charges.

There is another important reason why the decision of the commission in this case will affect railroad credit. It is generally recognized that the manufacturer or the merchant has the privilege, in a period of rising costs, of passing these costs on to the consumer. The railroads are asking for the same privilege here. They are asking for no more. Just as the coal operator has increased his selling price, in an effort to cover increased costs of production, so the railroads, when it appears that their costs have been increased by $290,000,000 annually, are asking that a part of this expense be borne by their patrons.

If the commission denies this increase and says, in effect, that the railroads shall not be permitted thus to share their burden with their patrons, the effect upon railroad credit will be disastrous. Those who have invested in railroads will thereby learn that the railroad industry, economically, is a thing apart from other industry; that whereas strictly private business, even though operating under N. R. A. codes, has been told by the government that it may increase its prices as cost of production increases, the railroads, although privately owned and privately operated, are prohibited by law from applying the same economic law to their business problems.

It seems to be obvious, if the question of railroad credit is considered important, that nothing can be more injurious than for the Interstate Commerce Commission to say that the railroads shall not be permitted to advance their prices to meet increasing costs.

As a corollary of this proposition, although it may not be stated expressly in any opinion of the commission, the conclusion is inescapable that these increased costs must be borne not by those who use the railroads, but by those who have invested in their securities.

The argument was heard by the full membership of the commission, except Commissioner Eastman, and a committee of state commissioners. Chairman Tate, presiding, said it had been necessary to curtail to some extent the time allowed for the argument because the commission was engaged on other matters "of great public interest," presumably referring to its report on Co-ordinator Eastman's legislative recommendations. The opening argument for the railroads was made by R. V. Fletcher, vice-president and general counsel of the Association of American Railroads, who said that the balance of the time alloted to the roads would be reserved for possible discussion by other counsel of matters pertaining to rates on specific commodities.

Pacific Coast Objections to Car Pooling*

Defects in administrative and operating plans of new scheme pointed out

By W. B. Kirkland,

Superintendent of Transportation, Southern Pacific Company, Pacific Lines

UNDER the car service and per diem rules, any railroad is permitted today to use the cars of any other road, or to secure empty cars from its connections when required, by paying one dollar a day for each car used. There is nothing theoretical about these rules. They have worked satisfactorily over a considerable length of time. Under this system, the cars return to the owners automatically, whereas under the car-pooling plan proposed by the Federal Co-ordinator, there is a controlled return of equipment.

The new plan would place an additional financial burden on our transportation system, and the cost of transportation is reflected in freight rates. Therefore, the railways are reluctant to exchange a plan that is almost automatic in its workings, for one with an expensive overhead organization which is not time-tested. Further, it is doubtful if the plan would provide as efficient service to the shippers as the present handling. The present rules are not perfect, nor could there be perfection in the rules of any nation-wide organization that would have to fit the conditions of this continent. Changes have been made and are being made from time to time on a well-defined plan after careful analysis.

National Committee Appointed

Following the Co-ordinator's first release on October 13, 1933, which criticized the railroads' practices in handling empty cars, each of the three railroad regional co-ordinating committees appointed a committee of practical railroad transportation officers to analyze Mr. Eastman's release. To facilitate the study of the report, it was decided to combine the special committees from the three regions and secure the assistance of the American Railway Association and the Bureau of Railway Economics.

The joint committee met in Chicago in November, 1933, and held a series of conferences that extended into April, 1934. During this time, representatives of 29 railroads were called before the committee to explain their car-handling methods in detail. The special committee's completed report was passed to the Co-ordinator with certain recommended changes in the car service and per diem rules.

The report opposed a car pool that would disregard ownership costs, and that would remove direct control of equipment from the railroad which is responsible for supplying cars to its shippers. This report was not approved by the Co-ordinator. The innovations of the new plan, including the economies claimed, and its practicability, are necessarily subject to considerable analysis. Railroad transportation officers are doubtful as to its adaptability to the needs of the shipping public.

Savings Doubtful

A saving of $75,000,000 annually is claimed; this is computed on the basis of a check made in a selected week of 1933, which covered only certain districts on a few representative railroads. This estimate is theoretical and excessive, as there were not sufficient data assembled to prove that this enormous saving could be made.

In the proposed plan, provision is made for a per diem charge against each railroad in the pool to cover

* From an address delivered at the December meeting of the Pacific Coast Transportation Advisory Board.

interest, depreciation, insurance and taxes on each car, as well as administrative and other expenses incident to the operation. It is further provided that each participating railroad shall pay the expense of maintaining pool cars, allocated on the ratio that the mileage of pool cars on its rails bears to the aggregate pool-car mileage. Therefore, it is doubtful what the per diem balance would be on any railroad, and what would be the additional cost of repairing cars. There would also be an enormous additional expense in securing data and making reports to the pool manager of all cars on line. To compile these reports it will be necessary to have daily information as to interchange balances between railroads, condition of cars, requirements and surplus cars at each station, and cars moving in trains. This expense would offset a large part of the alleged saving to be made in empty car mileage.

It can be readily understood why the railroads that have been provident in building equipment to handle the traffic they originate, and that load off-line considerably more cars than they receive, are reluctant to accept any drastic change until all the facts are developed.

All Cars Not Alike

The conclusion in the Co-ordinator's report concerning the uniform size and interchangeability of box cars is subject to argument. The western railroads have provided themselves with large cubical-capacity equipment, such as 50-ft. auto cars, and high and wide 40-ft. box and auto cars, to meet the demands of their shippers. Furthermore, the interchangeability is restricted by the condition of the cars, the western railroads being required to maintain a larger percentage of their ownership in Class A condition than do the eastern roads. This is because the majority of the traffic originating on the Pacific Coast requires the highest-grade cars available, whereas the cars received under load from the East with merchandise, machinery, automobile parts, etc., and from the inter-mountain country under loads of coal, are not generally suitable for the eastward high class loading.

The report shows the trend of traffic since 1920 as a basis for comparing empty car mileage with loaded car mileage. This fails to take into consideration the constant change in car requirements. For example: A few years ago automobiles were loaded on flat cars and in gondolas, but now they are loaded in house cars, many of which are equipped with mechanical loading devices. It has also been necessary to equip a large number of cars with racks for automobile frames and engines, because of the establishment of assembling plants in the Pacific Coast territory, and there is no eastward movement of these commodities. Commodities such as salt and sulphur formerly moved in cars suitable only for rough freight, and lumber in open-top cars; they now require high class cars. Commodities such as newsprint, paper, bags, hampers, containers, wallboard, cotton and linters formerly moved in small cars, but now require equipment of large cubical capacity. These continual changes in equipment requirements make it impossible to use the trend of traffic as a basis for comparing empty car miles with either loaded or total car miles.

Carrying Charges Saved?

Another proposal in the plan is that, by reducing the ownership of equipment 10 per cent, a saving of $25,000,000 a year could be made in carrying charges. There are a number of cars that have been laid aside as unfit for service, upon which there is little, if any, carrying charge. While these cars are still being shown in the equipment register, they have not been in service for some time. If any reduction were made in ownership, these cars, and not the ones in Class A condition, would be selected. Further, any slowing down of the movement of equipment, which is inevitable under a car pool, would make it necessary to have a larger number of the better cars, instead of fewer.

There are various opinions as to what constitutes a Class A car. In the West, cars are generally designated as belonging to one of four classes, A, B, C and D, and as between single and double-sheathed, depending upon the type of lading they can safely transport. It is more economical to incur a few empty car miles to get a certain class of car into position for a load than to clean a car that has been loaded with oil barrels which have leaked oil, or with green hides or other commodities that contaminate a car and make it unfit for such high class lading as sugar, salt, dried fruits, flour, tin cans or cement.

Organization Faulty

The plan provides for an overhead organization with autocratic control of pooled equipment. The country is divided into five districts, with headquarters in Chicago for the Middle West and Northwest, one in Cleveland for the East, one in Boston for the Northeast, one in Atlanta for the South, and one in St. Louis representing the entire Pacific Coast.

This plan is contrary to the fundamental principles of private operation, in view of the fact that it proposes to take away from responsible officers of the railroads the repair, control and distribution of their property. The traffic advantage which a provident railroad has by maintaining an adequate supply of equipment would be eliminated and there would be no incentive for a railroad to hold on hand, for the benefit of its shippers, an adequate supply of cars for their prospective use.

It is significant that, in the merchandise traffic survey which was conducted by the Co-ordinator's Transportation Bureau, a plan is set up in which it is considered to the best interests of the shipping public to provide two agencies for the pooling of merchandise traffic, at an added expense of $10,000,000 a year, instead of the one-agency plan, nation-wide in operation. It, therefore, appears inconsistent that one branch of the Co-ordinator's staff considers the competitive feature so vital, while another branch is setting up a nation-wide non-competitive pool of box cars.

Would Further Deplete Pacific Coast Car Supply

It is proposed in the study of merchandise handling to save an enormous amount of empty car mileage each year by consolidating merchandise cars now moving on various railroads. That traffic moves principally westward, and this consolidation would further deplete the car supply on the Pacific Coast, as more traffic is originated there than is received. If the cars do not come west loaded, they will have to be moved west empty to balance the equipment. So long as railroads are operated, there is going to be considerable empty mileage in meeting the unbalanced traffic situation and the varying traffic necessities of the country's shippers as to special equipment.

In the event that any pooling plan is adopted, it should be tried out by regions instead of on a national scale. However, the railroads are giving renewed consideration to the question of improved methods of car handling, and they themselves will be able to solve this problem by making changes in existing practices that are consistent with supplying the best and most efficient service to the public.

Expenditures for Railway Supplies Up 160 Million

Purchases for 1934 largest in three years, despite severe slump since June—Some increases in stocks

WHILE interest in railway buying centers around expenditures and plans for a new motive power, new cars and new construction, and the newspapers editorialize on streamlined trains, air-conditioning and highway crossings, the facts, although not detracting from the activity of the carriers in such avenues of purchasing, forbid so narrow a conception of railway spending (particularly in a period when buying and employment are topics of national importance) by throwing light on the expenditures for supplies and parts.

The time is premature for complete figures of the year just ended but, with data for the first 10 months from roads earning 95 per cent of the operating revenues and with fractional figures for November, it is now estimated that railway purchases, exclusive of new equipment, amounted to approximately $625,000,000 in 1934. This is more than was indicated by earlier reports and exceeds the corresponding expenditures in 1932 and 1933 by $180,000,000, or 42 per cent, and $160,000,000, or 35 per cent, respectively. It lacks $70,000,000, or 6 per cent, of equalling the corresponding expenditures in 1931.

Purchases for the 12 months, consisting of approximately $211,000,000 estimated to have been spent for locomotive fuel, $39,000,000 for cross ties, $32,000,000 for rail and $340,000,000 for miscellaneous materials, show an 18-per cent increase in fuel purchases for 1933, a 100-per cent increase in tie purchases, a 200-per cent increase in rail purchases and a 50-per cent increase in miscellaneous supplies, which include lumber and repair parts for locomotives and cars. The expenditures with manufacturers, exclusive of those made for new equipment, were 62 per cent of the total purchases of material and supplies in 1933 and 67 per cent of the total in 1934.

Impressions that the increased purchases were made with federal loans are only party correct. While the loans which the railroads authorized by the P.W.A. amounted to $199,000,000, the money was not all applied to the purchase of materials and supplies, and all of the roads did not participate in these loans, while increases in purchases were made on all railroads. The size and variation of the increases, moreover, are too large to have been caused by higher material costs, although these costs were factors in the increased expenditures, as will be discussed in a later issue. The increases in purchases are principally attributed to better earnings in the earlier part of the year and to increased maintenance work.

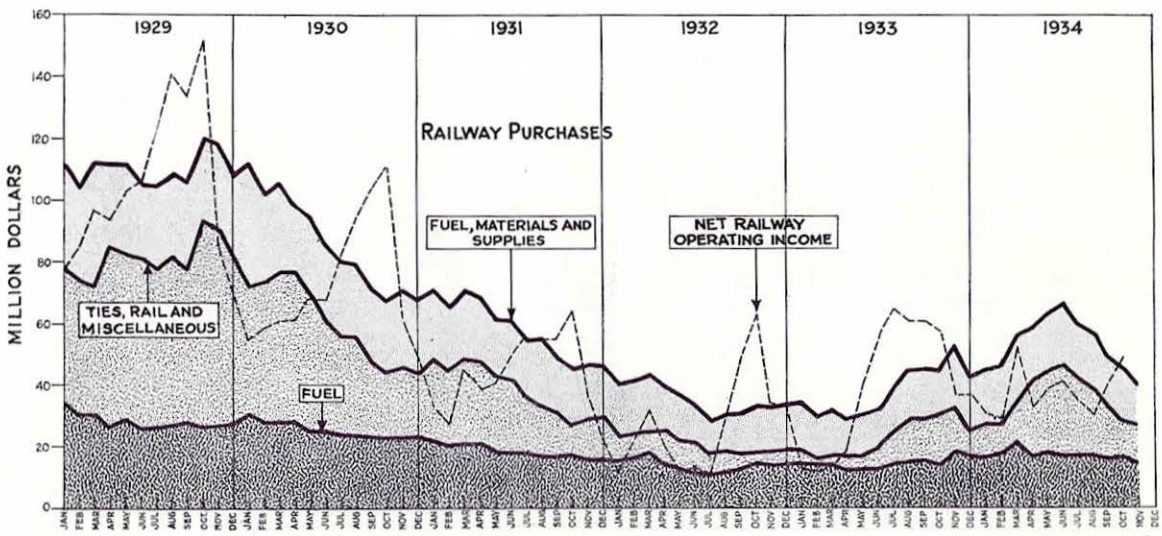
Materials and Supplies Purchased—1934*

	Fuel (000)	Cross Ties (000)	Rail (000)	Other Material (000)	Total (000)	Total, Less Fuel (000)
January	$17,630	$2,100	$1,570	$24,300	$45,600	$27,970
February	18,700	2,550	1,500	23,500	46,250	27,550
March	22,100	3,000	4,300	28,100	57,500	35,400
April	17,200	3,400	7,200	31,300	59,100	41,900
May	18,200	3,960	5,140	36,200	63,500	45,300
June	17,700	4,380	4,420	38,250	64,750	47,050
July	17,850	3,510	3,740	34,900	60,000	42,150
August	17,700	3,790	2,420	33,590	57,500	39,800
September	17,000	3,700	1,220	28,080	50,000	33,000
October	17,600	3,240	560	24,450	45,850	28,250
November	14,900	2,700	100	20,800	38,500	23,600

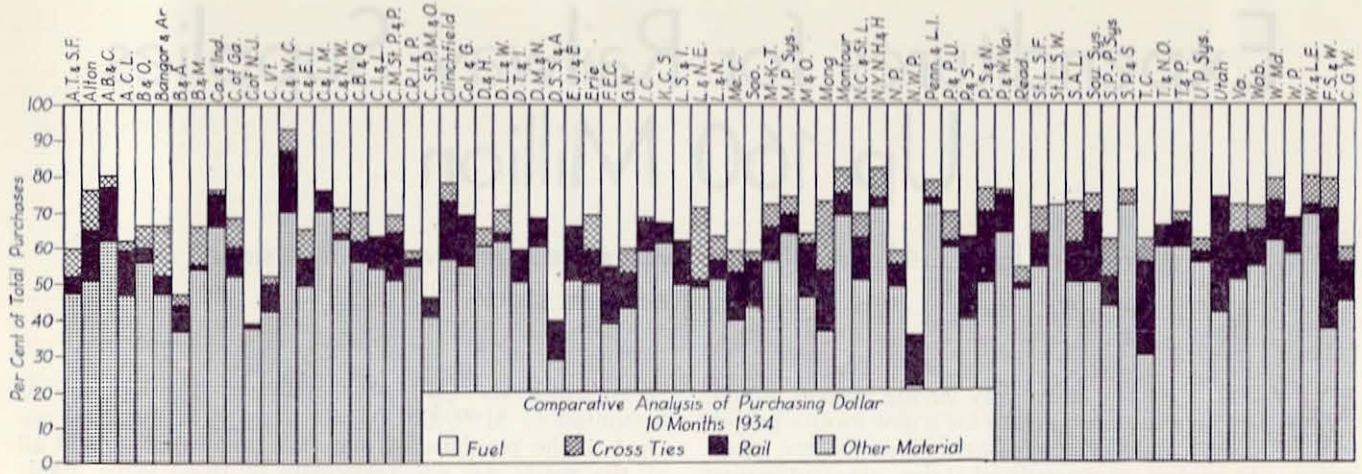
*Subject to revision.

Increases General

The purchases made by different roads up to October present many striking increases over the corresponding purchases in 1933. The increases for fuel and supplies were $5,481,000 on the Atchison, Topeka & Santa Fe, or 38 per cent; $2,525,000 on the Atlantic Coast Line, or 52 per cent; $10,501,000 on the Baltimore & Ohio, or 110 per cent; $3,565,000 on the Boston & Maine,



Trend of Railway Purchases of Fuel and Materials and Supplies, January, 1929, to November, 1934



How Purchases for the First 10 Months of 1934 Were Divided on Representative Railroads

or 72 per cent; $4,167,000 on the Chesapeake & Ohio, or 52 per cent; $3,952,000 on the Chicago & North Western, or 40 per cent; $4,059,000 on the Chicago, Burlington & Quincy, or 45 per cent; $4,228,000 on the Chicago, Milwaukee, St. Paul & Pacific, or 42 per cent; $2,861,000 on the Chicago, Rock Island & Pacific, or 38 per cent; $3,647,000 on the Erie, or 40 per cent, not counting P.W.A. expenditures; $5,407,000 on the Missouri Pacific lines, or 46 per cent; $10,501,000 on the New York Central lines, or 30 per cent; $36,786,000 on the Pennsylvania, or 110 per cent; $4,800,000 on the Southern lines, or 53 per cent; $7,413,000 on the Southern Pacific—Pacific system, or 82 per cent; $2,200,000 on the Union Pacific system, or 12 per cent; and $2,400,000 on the Wabash, or 62 per cent. Expenditures were larger on roads in receivership as well as on those not in receivership. Large expenditures were made last year for rail and ties by roads which were entirely out of the market for these materials in 1933 and 1932.

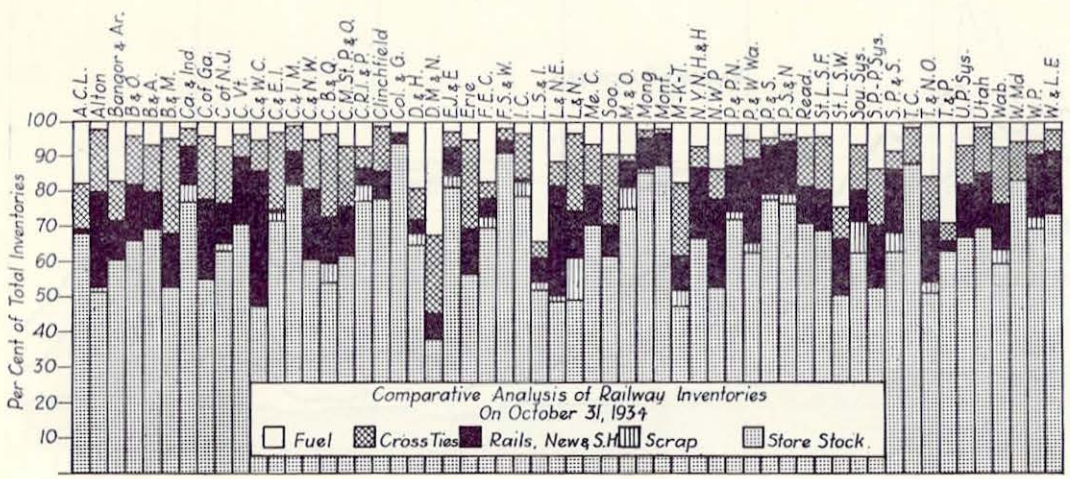
Sharp Declines Since June

While the expenditures made by the roads last year for fuel and supplies exceeded those of the year previous by a wide margin, the gain resulted largely from the volume of buying in the first half of the year. This is shown by the value of materials which the roads, collectively, are estimated to have received each month. Monthly expenditures for fuel and cross ties were uniformly maintained, but those for rail, after increasing from $1,570,000 in January to $7,200,000 in April, according to the most recent figures, declined to $560,000 in October, and those for miscellaneous materials, after increasing steadily from $24,300,000 in January to $38,250,000 in June, declined month by month to $24,450,000 in October. Total purchases, after rising from $45,600,000 in January to $64,750,000 in June, declined steadily to $45,850,000 in October, and the best available data at this time indicate a further reduction in total purchases of fuel and materials and supplies to $38,500,000 in November, which is less than the corresponding expenditures in January.

These figures are striking proof of the fact that the railroads must be allowed adequate net earnings if they are to contribute through their purchases to the restoration of prosperity. In the first six months of the year, when net railway operating income showed an increase of $71,000,000 over the preceding year, railway purchases of materials and supplies, excluding fuel, amounted to approximately $225,000,000. In the last six months of 1934, when net railway operating income fell some $100,000,000 below the same months in 1933, railway purchases of materials and supplies, again excluding fuel, showed a marked decline to a total of approximately $185,000,000.

There is naturally a slight lag before changed trends in earnings are reflected in railroad buying. The monthly figures illustrate both this lag and the inescapable relationship between the two factors. Fuel is excluded in the following figures of material and supply purchases, as this item, of necessity, is relatively steady.

Net earnings in January, 1934, were $17,000,000 above January, 1933, and purchases in January, last year amounted to $27,970,000. In February, March and April of 1934, net earnings were, respectively, $19,-



Comparative Inventories, Oct. 31, 1934—Rail and Scrap Included with Store Material Where Not Otherwise Shown

000,000, $41,000,000, and $13,000,000 above 1933, and purchases increased from $27,550,000 in February, to $35,400,000 in March, and again to $41,900,000 in April.

Net earnings in May and June, 1934, declined somewhat below 1933, but due to the lag, and the hope that these declines might be temporary, purchases increased still further to $45,300,000 in May, and to $47,050,000 in June. But as each succeeding month told the same story of reduced net earnings, railroad purchases of materials and supplies fell to $42,150,000 in July, to $39,800,000 in August, to $33,000,000 in September, to $28,250,000 in October, and to $23,600,000 in November.

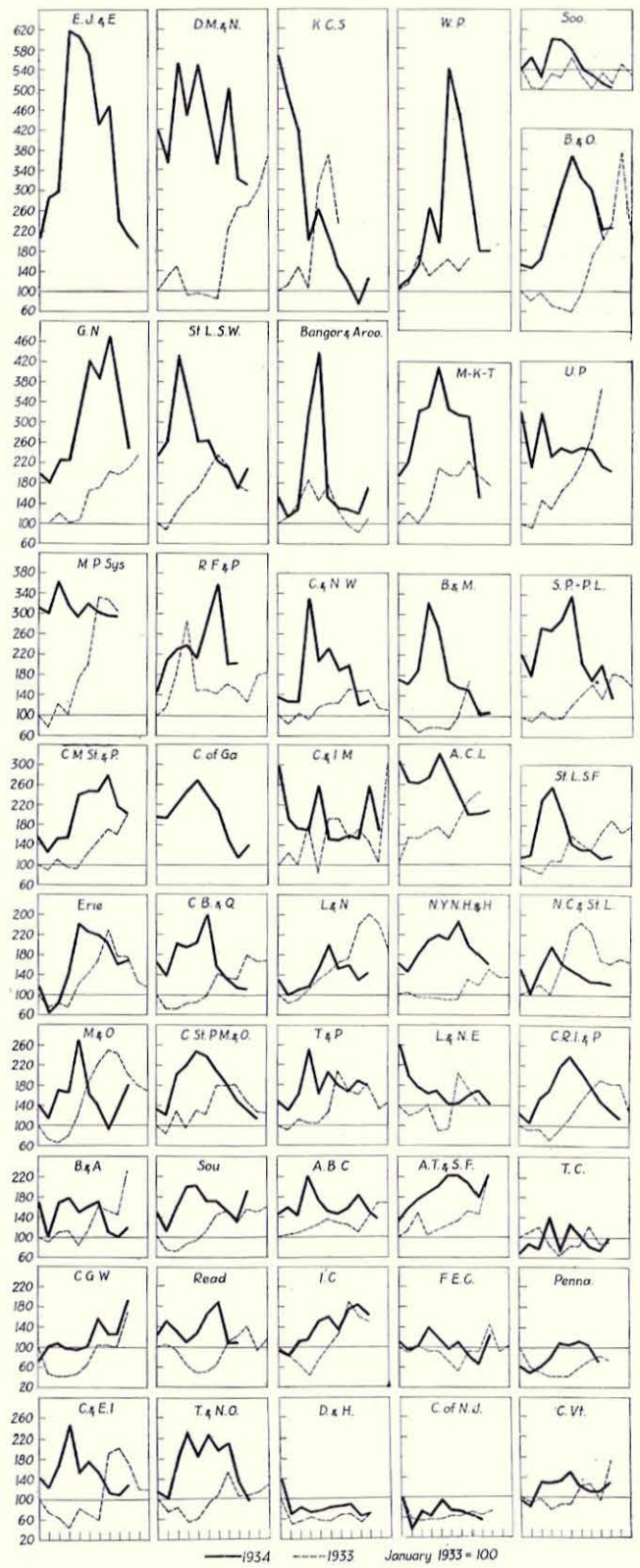
The purchases in the aggregate were larger every month than in 1933, but the slump in expenditures since last June is the most severe that has been experienced since 1932, and reflected sharp reductions in buying on most of the roads, as is clearly brought out in the charts. The railroads, collectively, appear to have expended approximately $75,000,000 less since June than they would have expended if the rate of buying in June had been maintained during the second half of the year.

This recession in railway buying has been a blow to the durable goods' industry after the impetus given to business and employment by the increased railway buy-

Purchases of Fuel and Supplies—10 Months

	1932	1933	1934
Alton	$ 1,921,135	$ 1,605,601	$ 3,503,056
A. T. & S. F. Lines	16,192,763	14,616,585	20,097,692
Atlanta, Birmingham & Coast			589,276
Atlantic Coast Line		4,857,590	7,382,487
Baltimore & Ohio	8,967,617	9,303,569	19,804,459
Bangor & Aroostook	1,019,327	793,396	1,077,172
Boston & Albany	3,050,607	2,920,164	3,416,182
Boston & Maine	6,071,917	5,051,649	8,616,378
Cambria & Indiana			116,344
Central of Georgia	1,268,752	1,834,028	2,411,128
Central of New Jersey	3,614,654	3,223,832	3,345,610*
Central Vermont	934,138	971,323	1,040,138
Charleston & Western Carolina			357,001
Chesapeake & Ohio	6,640,337	8,059,219*	12,226,682
Chicago & Eastern Illinois	1,369,215	1,413,399	1,895,878
Chicago & Illinois Midland	250,109	340,330	429,204
Chicago & North Western	9,795,332	9,881,890	13,833,006
Chicago, Burlington & Quincy	8,818,743	8,974,310	13,033,797
Chicago Great Western	2,518,144	2,492,427	2,889,426
Chicago, Ind. & Louisville		875,255	878,868
Chicago, Mil., St. P. & Pac	12,742,668	10,172,649	14,400,668
Chicago, R. I. & Pacific Lines	7,951,404	7,517,041	10,378,771
Chicago, St. P., Minn. & Omaha	2,488,585	2,372,383	2,927,072
Clinchfield	493,130	497,152	830,368
Columbus & Greenville	129,785	123,337	179,200
Delaware & Hudson	4,349,599	3,590,861	4,430,453
Delaware, Lack. & Western	5,714,569	5,332,293	6,290,374
Detroit, Toledo & Ironton	305,338	332,602	629,246
Duluth, Missabe & Northern	468,605	803,544	1,464,742
Duluth, S. S. & Atlantic		223,938	351,341
Elgin, Joliet & Eastern	665,287	1,258,993	1,144,419
Erie	10,510,920	9,007,066	12,654,323
Florida East Coast	747,022	914,061	1,145,499
Fort Smith & Western			113,423
Great Northern	8,513,199	6,786,193	12,792,451
Illinois Central	11,632,817	11,875,669	15,706,612
Kansas City Southern	1,168,131	1,050,478	1,375,738
Lake Superior & Ishpeming	27,907	139,190	204,921
Lehigh & New England	319,042*	424,817	606,012
Long Island		1,496,925	1,976,507
Louisiana & Arkansas	343,825	395,149	808,636
Louisville & Nashville	7,376,919	7,355,182	8,534,151
Maine Central		1,381,437	2,526,714
Minn., St. P. & S. S. Marie	3,543,149	3,003,433	3,785,202
Missouri-Kansas-Texas	2,256,255	2,373,883	4,172,371*
Missouri Pacific	8,912,002	11,990,507*	17,397,134
Mobile & Ohio	1,006,109	1,117,209	1,279,764
Monongahela			331,213
Montour	194,492	223,868	312,412
Nashville, Chat. & St. Louis	1,607,667	2,240,786	2,227,203
New York Central System	31,020,187	37,937,263	48,448,461
New York, Chicago & St. Louis	4,103,530	3,289,977*	4,637,651
New York, New Haven & Hart	5,291,401	4,867,842	8,837,178
Northern Pacific	7,306,353	6,359,684	8,866,437
Northwestern Pacific	325,414	255,052	301,872
Pennsylvania	33,450,150*	32,594,264	69,380,821
Pere Marquette	1,994,471	3,197,781*	3,924,077
Pittsburg & Shawmut		98,523	89,040
Pittsburg, Shawmut & Northern	135,144	115,915	189,430
Pittsburgh & West Virginia	147,452	56,945	302,028
Reading	5,905,344	4,800,598	6,757,279*
Richmond, Fred. & Potomac		964,674	1,222,969
St. Louis-San Francisco	4,673,228	7,009,754	8,530,505
St. Louis Southwestern	1,091,708*	831,037	1,173,140
Seaboard Air Line	4,229,534		8,183,972
Southern	11,219,887	9,076,863	13,872,296
Southern Pacific—Pac. Sys.	11,086,703	9,031,881	16,444,226
Southern Pacific—Tex. & La	3,054,755	2,618,936	4,780,364
Spokane, Portland & Seattle	607,490	598,317	1,604,238*
Tennessee Central	200,386	276,909	333,918
Texas & Pacific	2,068,934	2,060,302	3,074,173
Union Pacific	15,595,114	17,570,361*	19,770,145
Utah			70,325
Virginian			1,297,466
Wabash	4,289,336	3,897,973	6,283,656
Western Maryland		1,708,933	3,007,533
Western Pacific	1,498,946	1,607,640*	2,270,000
Wheeling & Lake Erie	620,099	1,185,117	2,054,836

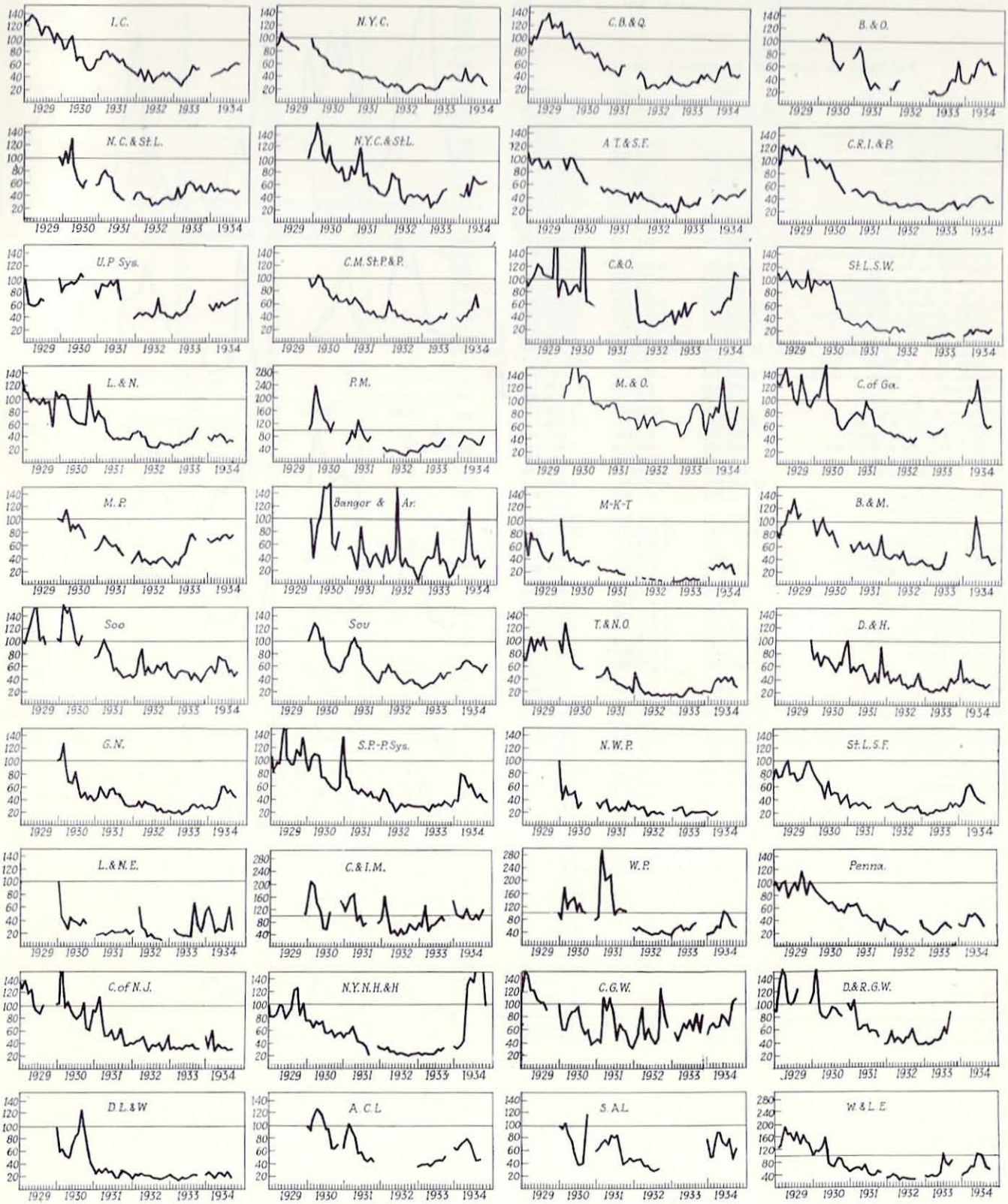
*October estimated.



Purchases from Manufacturers (Excluding Fuel, Ties, Rails and Equipment) on Selected Roads, January, 1933, to November, 1934. January, 1933, equals 100. Data Missing Where Breaks Occur in Charts

ing earlier in the year and, reflecting as it does inadequate earnings rather than reductions in the need for materials by railroads, emphasizes the persistent demand in the public interest for constructive treatment of the transportation problem by those in private and business life who share the responsibility for recovery programs.

The book value of supplies in the hands of the railroads on October 31, 1933, based on data available at this time, was approximately $310,000,000, consisting of approximately $19,500,000 of locomotive fuel, $42,000,000 of ties, $39,000,000 of new and second-hand rail, $202,000,000 of store stock and approximately $7,500,000 of unsold scrap. As compared with October 31, 1932, the inventories show increases in the book value of total inventories of approximately $4,500,000, or 6 per cent, a reduction in fuel balances of approxi-



Fuel and Materials and Supplies Purchased on Selected Railroads, January, 1929, to November, 1934. January, 1930, Equals 100. Data Missing Where Breaks Occur in Charts

mately 5 per cent, a reduction in the tie balance of approximately 8.5 per cent, an increase in the rail balance of approximately 15 per cent, and an increase in the storehouse stock of approximately $19,500,000, or 15 per cent. Total book balances were larger on 39 roads and smaller on 19 roads in a list of 58 roads for which comparable data are available, while rail balances were larger on 31 and smaller on 20 roads of 51 reporting figures.

Divisions of Supplies in Stock—October 31 (Estimated)

	Fuel (000)	Ties (000)	Rails (000)	Store Stock (000)	Scrap (000)	Total (000)
1933	$20,500	$50,000	$34,000	$182,500	$8,500	$295,500
1934	19,500	42,000	39,000	202,000	7,500	310,000

Fuel and Materials and Supplies in Stock—Book Values on October 31

Road	Rail—New & S. H. 1933	1934	Total 1933	1934
Atlantic Coast Line	$1,286,021	$ 51,812	$3,510,242	$3,358,013
Alton	123,168	335,909	499,551	1,129,940
Baltimore & Ohio	1,380,875	1,560,760	8,894,049	9,609,825
Bangor & Aroostook	58,008	99,302	802,783	844,822
Boston & Albany	142,178	165,529	1,430,933	1,559,757
Boston & Maine	309,328	743,252	4,896,984	5,176,957
Cambria & Indiana	1,249*	5,418	44,004*	47,551
Central of Georgia	179,410	245,032	904,483	1,063,598
Central of New Jersey	215,061	199,416*	1,826,848	1,581,713*
Central Vermont	115,377	89,600	461,577	458,116
Chesapeake & Ohio			3,552,106*	4,325,511
Chicago & East. Illinois	28,066	12,176	557,039	632,416
Chicago & Ill. Midland	4,001	26,639	226,609	282,890
Chicago & North Western	999,071	1,472,394	6,876,217	7,111,968
Chicago, Burl. & Quincy	1,128,771	1,029,716	7,781,596	7,998,041
Chicago, Mil., St. P. & P.	414,915	1,430,472	8,393,686	8,756,838
Chicago, Rock Island & Pac.	217,638	254,751	5,481,783	5,278,805
Chicago, St. P., M. & Omaha	167,236	144,074	1,037,495	1,023,379
Clinchfield	22,387	36,655	516,017	465,567
Columbus & Greenville	2,608	3,827	112,408	120,664
Delaware & Hudson	109,394	92,311	2,578,104	2,429,411
Duluth, Missabe & Northern	107,122	90,916	1,124,102	1,090,224
Duluth, S. S. & Atlantic	37,852	61,321	273,259	281,223
Elgin, Joliet & Eastern	95,541	77,861	1,091,971	996,804
Erie	522,934	514,852	3,285,014	3,899,272
Florida East Coast	181,967	80,337	1,638,918	1,553,179
Illinois Central	76,932	75,587	7,298,203	8,338,044
Lake Superior & Ishpeming	26,048	16,507	234,306	241,039
Lehigh & New England	48,616	132,293	350,674	417,481
Long Island	7,515	7,000	812,915	928,443
Louisiana & Arkansas	63,803	33,022	448,754	522,933
Louisville & Nashville	1,226,936	1,183,755	8,895,816	8,951,893
Maine Central	132,774	166,431	1,443,501	1,548,065
Minn., St. P. & S. S. Marie	248,868	177,861	1,921,682	1,913,678
Missouri-Kansas-Texas	117,594*	333,818*	2,336,321*	3,359,591*
Mobile & Ohio	39,851	44,228	667,626	631,827
Monongahela		27,882		269,607
Montour	4,486	12,050	141,367	153,916
New York Central				32,416,757
New York, Chicago & St. L.			1,601,075*	1,461,249
NewYork,NewHaven&Hart.	449,222	1,450,817	5,547,882	6,941,546
Northwestern Pacific	144,109	65,377	445,578	256,222
Pennsylvania	1,283,289	3,988,900	27,197,317	34,067,728
Pere Marquette			1,238,994*	1,281,340
Pittsburg & Shawmut	19,425	14,184	106,821	87,464
Pitts. & West Virginia	15,039	26,856	86,521	98,292
Pitts., Shawmut &Northern	13,086	16,344	100,082	103,064
Reading	717,805*	539,396*	5,230,363*	4,856,428*
Richmond, Fred. & Potomac			765,561	827,923
St. Louis-San Fran.	372,040	507,890	3,425,403	4,344,083
St. Louis Southwestern	566,556	206,048	2,435,606	1,278,783
Southern	684,228	513,007	5,232,445	5,653,718
Southern Pacific—Pac. lines	4,110,539	1,883,685	13,525,881	10,442,768
South. Pac.–Tex. & La. lines	898,333	796,647	4,181,791	4,508,819
Tennessee Central	None	None	198,366	209,920
Texas & Pacific	58,740	88,542	2,732,256	2,937,360
Union Pacific	2,136,238*	2,523,452	13,571,544*	14,771,662
Utah		28,403		185,701
Wabash	242,695	293,812	1,906,537	1,800,478
Western Maryland				1,350,451
Western Pacific	37,400*	371,953	1,791,224*	1,991,475
Wheeling & Lake Erie	98,003	176,634	620,975	971,773

*September.

The inventory figures, while incomplete for the year, reflect considerable activity on some roads in disposing of accumulations of retired equipment and obsolete materials; also the suspension of many maintenance programs for which large quantities of material, including rail and lumber, had been purchased. How much the book balances have been changed by increases in material costs during the past year is still problematical.

President Plans One Agency To Regulate All Transport

(*Continued from page 42*)

ing to highway and waterway transportation such as were proposed by Mr. Eastman last year.

The President's reference is undoubtedly to the plan which has been advocated by Co-ordinator Eastman in most of his recent speeches for giving jurisdiction over all competing forms of transportation to a reorganized Interstate Commerce Commission, expected to be more completely described in his forthcoming report which will be accompanied by a draft of a bill for the purpose. Such a plan has also been recommended to the President recently by a Cabinet committee, although the extent of the reorganization proposed is such that it is not clear whether the commission contemplated would be an enlarged I.C.C. or an entirely new commission somewhat like the old one, with separate sub-commissions or divisions for the different transportation branches. It is apparently the intention also to lodge some of the functions which have been exercised by the commission in the Department of Commerce—the functions which are described loosely as "administrative or executive," as distinguished from the "quasi-judicial" functions exercised in rate-making. The functions which thus might be transferred and expanded to cover the other forms of transportation might include those relating to safety inspection, accounts, statistics, etc.

Neither has it been made entirely clear as to what significance, if any, should be attached to the words "regulatory administration," although the President has occasionally in offhand speaking used the word "administration" in referring to functions of the commission or of the co-ordinator which are commonly supposed to be purely regulatory rather than managerial.

Mr. Eastman's Point of View

In an address last week at Reading, Pa., Mr. Eastman said: "The only important arguments in favor of separate commissions are, first, that each form of transportation has its own peculiar conditions and special problems which require specialized attention; and, second, that separate commissions could act more quickly than a larger centralized body. Both of these needs can be met by an appropriate reorganization of the Interstate Commerce Commission which will enable it to combine specialization with co-ordination, and at the same time make possible a more flexible and less unwieldy procedure for the conduct of its business. Regulation by code is open to the same objections as regulation by separate commissions, but there are additional grounds of objection.

"If self-regulation by codes were the answer, the logical and inevitable thing to do would be to apply this system of regulation to the railroads as well as to the trucks and other forms of transportation. There are, however, certain desirable things, not inconsistent with commission regulation, which can often be better accomplished by a code than in any other way; and the opportunity to accomplish such results should be open. The organization of the industry which is brought about and fostered by a code can be of great help to Commission regulation. There is even no reason why a transportation industry in its code should not undertake self-regulation of rates, so long as regulation of rates by the commission is not precluded, where necessary. All of these opportunities should be open, but whatever

(*Continued on page 54*)

Materials Economics in Light-Weight Railway Cars

The strength-weight relation for the material limits the minimum weight of structure attainable without sacrifice of safety

By E. J. W. Ragsdale

Chief Engineer, Rail Car Division, Edward G. Budd Mfg. Co., Philadelphia, Pa.

THE engineer always hopes that some day he may create an ideal design and then be able to find a material suited to it. Rarely does he realize this ambition. He usually finds the material already stipulated, either through price, prejudice or matters of policy. These, in turn, are very apt to have been originated in some expressed desire or demand of the customer. This gentleman then finds himself in the position of the patient who tells the doctor what ails him and how to cure it. Whether or not he gets his way, he usually complains of the treatment.

Strangely enough, the business man who can appreciate the worth of an ideal investment, and who willingly pays a premium for it, will often fight shy of any engineering ideal, although the returns may be even greater and more certain. He will, furthermore, insist on good stuff in the suit which he wears, and then chisel on the material for plant equipment whose maintenance is delegated to someone else.

The situation is understandable when one reflects that the choice of material is never an easy one. There are so many considerations involved that the engineer himself is often perplexed. Decision should rest upon the result of elaborate study and research extending over years, perhaps. However, such is the nature of competitive business that the need is rarely anticipated. It usually follows hysterically upon the discovery of some new demand. There is then no time for deliberation, and, decision being the function of management, the engineer finds himself not only with a problem to solve, but with the answer already given. It requires a lot of back-figuring.

The Zephyr Has Demonstrated Marked Earning Capacity

Such is already the history of the development in light-weight railway equipment. Having originated with stainless steel and the aluminum alloys in debatable positions and having successfully demonstrated the doctrine of lightness as against needless weight, this development is now confronted with a hastily conceived competition based largely upon the hope that cheaper steels can be more efficiently employed than they ever have been heretofore. Entirely lost from sight are the fundamentals of light-weight construction. Most immediate seems to be the need for a cheaper material, and just how this is to be maneuvered into competitive position, structurally, is a matter for engineers to argue about.

The Weight-Strength Relation

So far, engineers have been arguing. There has been plenty of argument found in the fact that stainless steel, although three times as strong as the aluminum alloys, is also three times as heavy and that both cost approximately the same. That argument has to be settled on the basis of practical utility. When, however, there is introduced into the picture newer alloys of steel whose weight-strength relation is only half as favorable as that of stainless or the aluminum alloys, the argument had better be returned to where it originated, namely, with the business man. Shorn of its trappings, his argument is briefly about as follows:

1—Light weight train construction seems to be here to stay.

2—Stainless and aluminum are all right, maybe, but 40 cents a pound is too much to pay for any building material.

3—Mild steel is obviously out. It is identified with the old construction. Why not then get a better steel, but it must be a cheap one?

4—What if it does weigh a bit more? It will still be lighter than the old equipment and this talk of weight economics is overdone, anyhow.

5—Factors of safety? How to put it together? What is the history behind this steel? Oh! let the engineers figure out that one.

The admission that lighter construction is here to stay is at least tribute to the materials and organizations which have effected that change of thought. Certainly,

40 cents a pound is a lot to pay for metal when one recalls that mild steel can be bought for two. When, however, that metal alone permits accomplishment of an idea, and if that idea is worth the price, why not first investigate the worth before rejecting the idea on account of the cost.

The newer low alloys of steel belong to "weight reduction" as distinguished from true light-weight construction. There, they serve a useful purpose. They permit rehabilitation of conventional type equipment; they do not, however, permit even partial realization of the ideal. The cycle of weight increment or decrement can be strangely vicious or beneficial. An unwise use of these alloys will not only fall short of the ideal, but leave it little better off than the revamped conventional. Light trains are either right or wrong. If wrong, they are too expensive at any price; if right, the compromised design will prove to be the more costly.

Safety is the watchword of railroading, be it in equipment or in its operation. In equipment, this is expressed by what is known as the factor of safety. This factor, rather arbitrarily chosen, is based on experience in a certain type of service. When speeds increase, so does the requirement of safety. Any material not sympathetic to this had best be confined to use within its limitation. The conventional safety factor for equipment running at some 60 miles an hour is about four; that for high-speed streamlined trains should be not less than six. Only high tensile metal can give this without undue weight.

Some Arithmetic of Light Weight

Engineers do try to figure these things. They also try to figure out how best to use and assemble the materials employed, but they do not know how to divide a greater force by a lesser strength and get the same weight. Nor do many of them yet seem to realize how 40-cent stainless steel can ever hope to compete with any low-priced alloys. The arithmetic is really quite simple. We start off with the Burlington Zephyr as an example and assume only that, if made of any other material than stainless, the factor of safety will be the same.

The new alloys have a tensile strength of some 72,000 lb. per sq. in. as compared with 150,000 lb. for stainless. It is fair to estimate then that two pounds of one is required to do the same work as one pound of the other. Light-weight construction requires a surprisingly few pounds of either.

The loaded weight of the Zephyr is 245,000 lb. Deducting trucks and traction motors, the total center-plate loads become 175,000 lb. Of this, only 46,000 lb. are represented by the stainless structure. Had a low alloy of steel been used, the total center-plate loads would have increased to 221,000 lb. This would have increased structural requirement and added proportionately another 24,000 lb. of alloy, making the new total structural weight 116,000 lb. instead of the original 46,000 lb. of stainless,—an increase of 40 per cent of the original center plate loading.

But, trucks are designed to certain loads. They originally weighed, exclusive of motors, 56,000 lb.; they will now weigh some 15,000 lb. more. The total loaded train weight will then have become:

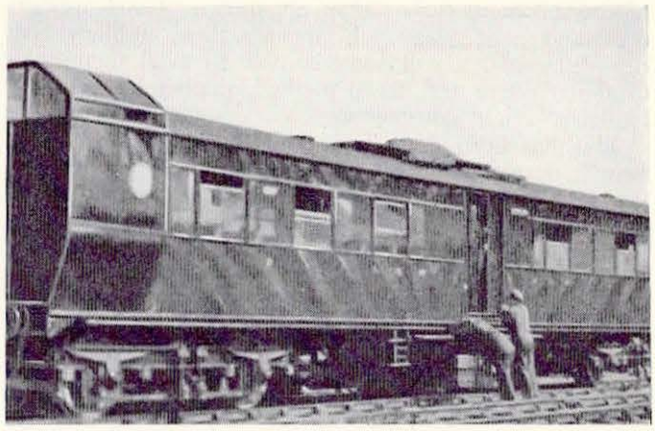
Original loaded train weight	245,000 lb.
Increase due to low alloy steel	46,000 lb.
Increase required in structure	24,000 lb.
Increase in truck weight	15,000 lb.
New loaded train weight	330,000 lb.
Total increase of weight	85,000 lb.

The increase naturally affects power requirement. The Zephyr has 600 engine horsepower available for propulsion, or 400 lb. of loaded train per horsepower. Increased loading calls for additional power, and in the case of Diesel electric drive, this too adds about 90 lb. per horsepower. A bit of algebra shows the increase of horsepower required to be 300, with a corresponding additional increment of 27,000 lb. to the train load.

There happens to be available another engine having just the 900 horsepower now called for. The increased cost over that of the 600-horsepower unit originally used is $31,000.

The stainless used in the Zephyr amounted to $20,000. Had it been replaced by 116,000 lb. of an alloy steel, this would have cost $5,800. The apparent saving of $14,200 in basic material cost is, however, rather upset by the corresponding increase of $31,000 for the power plant.

Nor is this the full story of what an apparently small weight increase can do to economies. The larger power plant adds, through fuel, oil and maintenance, 4 cents a mile to operating expense. This means about $4,000 a year, or a 5 per cent return on $80,000. Add to this the $31,000 for increased power and subtract the saving incident to a cheaper material. The so-called cheaper train will then be found to have tied up an equivalent capital investment of $96,800 more than had it been built of the more expensive metal in the first place.



An Example of Improper Use of Thin Material—A European Rail Car in Which Shear Lines in the Sides and Compression Buckles in the Letterboard Tell the Tale of Too Much Weight Reduction

Material Not the Principal Item of Cost

But, so strong is the impression created by the cost per pound of stainless steel, that one readily attributes to it the expense of these pioneering efforts. Actually, the stainless steel used in the structure of the Zephyr constituted but 8 per cent of the total cost. Engineering, appointments, good workmanship and the power plant, represent the really big items of expense. Any one of these might have been chiseled by more than was paid for the steel, had such been the desire of builder or customer.

Furthermore, in considering the substitution of cheaper alloys, one must not assume that the technique of application automatically cheapens in proportion to the base price of material. As a matter of fact, these newer alloys lack an established technique. It is proposed to assemble them by riveting and welding. Both arts have been highly developed for structures in heavy gages, but the assumption that they may be extended to efficient use with thinner and stronger metals is possibly as ambitious as is the adoption of thin closed sections for a corrodible material. Good welding is a test

of organization, rather than apparatus. Good welders command good wage. It appears then, unlikely that these new alloys will soon be able to avail themselves of the effective and cheap method of assembly required for light weight construction.

This has been done for stainless. The Budd Company's development extends back over a good many years. Starting with aircraft and railroad structures of extreme lightness, it has progressed to those of ruggedness. In all this time there has not been a single case of structural failure. The sections used have not only been designed to guard against failure, but they have been predicated upon the elimination of the element of personal skill in an assembly which requires uniform effectiveness.

No True Saving in Cheaper Steel

With, then, no true saving resulting from the mere substitution of a cheaper steel for a more expensive one, and with no promise of a cheaper technique of application, these alloys had better be returned to the field for which they were originally developed. With these steels, for instance, the reduction of a coach weight from say 130,000 to 100,000 lb. is quite legitimate. When they are offered, however, to reduce that weight down to as low as 60,000 lb., their utility has been overextended.

Freight cars again suggest further application. These roll only for a small percentage of their life. The rest of the time they are largely storehouses and subjected to all the local damage of loading and unloading. The metal in them is predicated in thickness and weight upon conditions having little relation to primary load stresses or dynamics of movement. Any improvement, therefore, over mild steel will justify itself in reduced cost of maintenance. In both cases the gages are substantial and the joining of material not critical. This condition would seem to define as well as to limit the use of these alloys. Their extension into true light weight construction is not feasible.

Consider Revenue as Well as Cost

Maybe these new trains are idealistic. Maybe they do cost more than some half-measure compromise. The fact, nevertheless, remains that they have demonstrated their economics, they have proven their worth, and, above all, they have aroused the public interest. The building of these first high-speed, streamlined trains has required courage, but it would seem to require courage of an even higher order to attempt to duplicate or approach their record by any project, the sole recommendation of which is the use of cheaper materials.

After all, if a lowered first cost is the chief aim, and if its attainment can be had only through sacrifice of performance, safety or appearance, the benefits on the one hand should be weighed against the shortcomings on the other, and both should be given values. For instance, the interest on the initial investment in the Zephyr figures at some 6½ cents a mile, or a little more than the revenue derived from three passengers at a two-cent tariff. The Zephyr has already exceeded an anticipated business increase to the point where a fourth car will be added. Furthermore, the earning capacity of this train promises a possible retirement of the entire first cost in about two years.

First cost would, therefore, not seem to be the determining factor. All important is earning capacity. If the price of this be a relatively expensive material, then that material is the wisest investment.

President Plans One Agency To Regulate All Transport

(Continued from page 51)

transportation codes are thus established should be under a centralized governmental administration, linked with the regulatory body."

Senate Committee on Interstate Commerce

In the Senate the proposed legislation will not be in particularly sympathetic hands from the railroad point of view, since Senator Wheeler, of Montana, has been elected chairman of the committee on interstate commerce, succeeding Senator C. C. Dill, who did not return to Congress. Senator Wheeler in his past service on the committee has always been hostile to the railroads and it has been reported that he is now having drafted a government ownership bill. However, it is believed that in the present circumstances the fact that the bill will be put forth as an administration measure will outweigh many other considerations. In the House the bill would come before the committee on interstate and foreign commerce, the chairman of which is Representative Sam Rayburn, of Texas, who in the last two sessions has sponsored the bills for regulation of motor vehicle transportation.

Assignments to the Senate committee on interstate commerce, including several new members, were approved on January 7 as follows: Burton K. Wheeler, Montana, chairman; E. D. Smith, South Carolina; Robert F. Wagner, New York; Alben W. Barkley, Kentucky; M. M. Neely, West Virginia; William H. Dieterich, Illinois; Augustine Lonergan, Connecticut; Fred H. Brown, New Hampshire; Huey P. Long, Louisiana; Homer T. Bone, Washington; A. V. Donahey, Ohio; Sherman Minton, Indiana; A. Harry Moore, New Jersey; Harry S. Truman, Missouri; James Couzens, Michigan; Jesse H. Metcalf, Rhode Island; Daniel O. Hastings, Delaware; Wallace H. White, Jr., Maine; James J. Davis, Pennsylvania; Henrik Shipstead, Minnesota.

Provision for another program of loans to railroads for maintenance and equipment may be included in the new public works program, which the President said would also include "non-federal projects," but new legislation will be required for the new program.

The Budget included no new appropriation for the Public Works Administration, although it included an estimate of $15,000,000 for railroad loans in the fiscal year 1936, apparently referring to the unexpended part of the $199,607,800 already allotted for the purpose. Any R. F. C. loans to railroads would also be in a separate bill, because the corporation's lending powers now expire on January 31, unless extended, as they are expected to be. The Budget estimate included $29,300,000 for railroad loans by the R. F. C. in 1936 and $50,000,000 for 1935, as compared with actual expenditures in 1934 of $31,817,442.

Meanwhile the Railway Labor Executives' Association is laying plans for an active campaign for the legislation it desires and several of the bills which it had introduced at the last session, including the six-hour day, full-crew, and train limit bills, were re-introduced in the House and the Senate on the first days of the session. The subjects of most of these bills have been included in the study which has been made by Mr. Eastman's Labor Relations Section, a report of which is expected at an early date, and Mr. Eastman's views as to some of the principles involved are expected to be included in an address at a meeting called by the Railway Labor Executives' Association at Chicago on January 12.

NEWS

Alba B. Johnson, Former R. B. A. President, Dies

Had also served, from 1911 to 1919, as president of the Baldwin Locomotive Works

Alba B. Johnson, who retired from the presidency of the Railway Business Association in April, 1932, after having held that position for 14 years, including the difficult post-war period, died of a heart ailment at his home in Rosemont, Pa., on January 8 after an illness of several months. Mr. Johnson was president of the Baldwin Locomotive Works from 1911 until 1919. He was in his seventy-seventh year.

Alba Boardman Johnson was born at Pittsburgh, Pa., on February 8, 1858, and was graduated from Central High School, Philadelphia, in 1876 with a B.A. degree.

Alba B. Johnson

Later he was awarded LL.D. degrees from Ursinus College (1909) and from the University of Vermont (1928). Mr. Johnson began his business career in 1877 as a junior clerk with Burnham, Parry, Williams & Co. (now Baldwin Locomotive Works) at Philadelphia. During 1878-1879 he was employed as a stenographer by the Edgemoor Iron Works, Wilmington, Del., returning in 1879 to Burnham, Parry, Williams & Co. where he continued in stenographic positions until 1896. In the latter year Mr. Johnson became a partner in the firm and continued as such until 1909 when Burnham, Parry, Williams & Company was incorporated into the Baldwin Locomotive Works. With the incorporated company he was vice-president and treasurer during 1909-1911 and president from 1911 until his retirement in 1919. Meanwhile, in 1918, Mr. Johnson had been elected president of the R.B.A., a position which he retained for 13 years after his retirement from the Baldwin presidency, or until April, 1932, when he was succeeded by Harry A. Wheeler.

A man of many interests Mr. Johnson had at various times during his career been president of Jefferson Medical College, Philadelphia, president of the Pennsylvania State Chamber of Commerce and a director of the Federal Reserve Bank.

R.F.C. Loans to Railroads

Up to December 31 the Reconstruction Finance Corporation had authorized loans to railroads amounting to $457,856,080, of which $447,283,272 had been disbursed, and $70,727,837 had been repaid.

Club Meetings

The Canadian Railway Club will hold its thirty-second annual dinner at the Windsor Hotel, Montreal, on Saturday evening, February 2.

The next meeting of the Western Railway Club will be held on January 21, at which time Macy Nicholson, chairman of the National Railway Adjustment Board, will speak on Public Relations.

Low Fares on the Long Island

The Long Island's special round-trip tickets, 1-day, 30-day and other forms which were put in use at low rates on May 1, 1933, are to be continued on sale until April 30, 1935, or four months beyond the expiring date heretofore announced. These tickets are sold at rates 40 per cent, 20 per cent, and certain lower percentages, below the regular one-way fare.

New Alloy Steels and Their Application to Car Equipment

In the paper by G. N. Schramm, E. S. Taylerson and Albert F. Stuebing, presented at the Annual Meeting of the A.S.M.E., New York, December 4, 1934, and abstracted in the *Railway Age*, December 8, 1934, page 761, a statement was made that the authors believed the non-linear time-corrosion relationship of steel had not been pointed out previously. The attention of the authors has been directed to the fact that the non-linear time-corrosion relationship of steel was pointed out in an article by R. F. Passano, published in Industrial and Engineering Chemistry, November 1933, page 1247.

The tensile strength of Cor-Ten steel, shown in this Paper in Table III, physical properties, in plates, shapes and bars, should be 70,000 lb. per sq. in., minimum, instead of 65,000 lb.

Bills Affecting Railways Introduced in Congress

Consist mainly of reintroductions of bills previously put in but not acted upon

Bills affecting the railroads introduced in Congress during the first week of the session were mainly reintroductions of bills that had been put in before without being acted on. These included several on the program of the Railway Labor Executives' Association designed to increase the number of railroad employees and shorten their hours of work without reducing their earnings. The bill to limit the car length of trains was introduced by Senator Brown, of New Hampshire, as S. 27, and in the House by Representative Griswold, of Indiana, as H.R.169. The six-hour day bill was introduced by Representative Crosser, of Ohio, as H.R. 2749. The full-crew bill was put in by Senator Neely, of West Virginia, as S. 59. A bill requiring additional inspection of signal apparatus was also introduced by Representative Crosser as H.R. 2748. One to amend the employers' liability act was introduced by Representative Mead, of New York, as H.R. 3054. Representative Pettengill, of Indiana, also introduced as H.R. 3263 his bill of last session to repeal the long-and-short-haul clause of Section 4 of the interstate commerce act.

Representative Bacon, of New York, has introduced his bill for the regulation of motor carriers. Representative Guyer, of Kansas, has introduced a bill to require the employment of American citizens on observation, club, and sleeping cars. Representative Snyder, of Pennsylvania, has a bill proposing the charging of tolls for passages through locks in canalized rivers. Senator Wheeler, of Montana, has a bill to prohibit the surcharge for Pullman passengers. Senator George, of Georgia, has reintroduced a series of resolutions calling for investigations by the Federal Trade Commission, the Interstate Commerce Commission, of the committee on interstate commerce of the activities of railroad freight associations and of differences in freight rate levels in different sections of the country.

Castle to Address Railroad Club

O. C. Castle, director, Section of Car Pooling, Federal Co-ordinator of Transportation, will speak at the meeting of the New York Railroad Club on Friday, January 18, on the proposed box car pool. The address will be followed by an open forum discussion.

Net for Eleven Months Totaled $423,117,530

Return of 1.72 per cent compares with 1.77 per cent during like period of 1933

Class I railroads for the first eleven months of 1934 had a net railway operating income of $423,117,530 which was at the annual rate of return of 1.72 per cent on their property investment, according to reports compiled by the Bureau of Railway Economics of the Association of American Railroads. In the first eleven months of 1933, their net railway operating income was $436,485,963, or 1.77 per cent.

Operating revenues for eleven months totaled $3,013,940,715, compared with $2,850,273,772 for the same period in 1933, an increase of 5.7 per cent. Operating expenses amounted to $2,246,421,068, compared with $2,062,437,196 for the same period in 1933, an increase of 8.9 per cent.

Class I railroads in the eleven months paid $226,649,708 in taxes compared with $238,371,895 for the same period in 1933, a decrease of 4.9 per cent. For November alone, the tax bill amounted to $17,259,925, a decrease of $217,796 or 1.2 per cent under November, 1933.

Thirty Class I railroads failed to earn expenses and taxes in the first eleven months of 1934, of which 9 were in the Eastern district, 6 in the Southern, and 15 in the Western.

Class I railroads for November had a net of $31,582,703, at the rate of 1.47 per cent. In November, 1933, their net was $37,662,122, or 1.74 per cent. Operating revenues for November amounted to $256,967,180, compared with $257,685,946 in November, 1933, a decrease of 0.3 per cent. Operating expenses in November, totalled $197,871,881, compared with $191,841,964 in the same month in 1933, an increase of 3.1 per cent.

Class I railroads in the Eastern district for eleven months had a net of $248,539,940, at the rate of 2.18 per cent. For the same period in 1933, their net was $261,656,604 or 2.28 per cent. Operating revenues in the Eastern district for eleven months totaled $1,529,549,385, an increase of 4.9 per cent above the corresponding period in 1933, while operating expenses totalled $1,107,717,783 an increase of 8.5 per cent. Railroads in the Eastern district for November had a net of $19,082,837, compared with $21,120,314 in November, 1933.

Class I railroads in the Southern district for eleven months had a net of $47,953,481, at the rate of 1.62 per cent. For the same period in 1933, their net amounted to $53,062,459, at the rate of 1.76 per cent. Operating revenues of railroads in the Southern district for eleven months amounted to $374,390,994, an increase of 5 per cent above the same period in 1933, while operating expenses totalled $290,095,352, an increase of 8.4 per cent. Railroads in the Southern district for November had a net of $4,296,537, compared with $4,131,320 in November, 1933.

Class I railroads in the Western district for eleven months had a net of $126,624,109, at the rate of 1.24 per cent. For the same eleven months in 1933, they had a net of $121,766,900, at the rate of 1.19 per cent. Operating revenues in the Western district for eleven months amounted to $1,110,000,336, an increase of 7.2 per cent above the same period in 1933, while operating expenses totalled $848,607,933 an increase of 9.7 per cent. For November alone, the railroads in the Western district reported a net of $8,203,329, compared with $12,410,488 in November, 1933.

CLASS I RAILROADS—UNITED STATES

	1934	1933	Per cent of Increase or Decrease
	Month of November		
Total operating revenues	$256,967,180	$257,685,946	0.3 Dec.
Total operating expenses	197,871,881	191,841,964	3.1
Taxes	17,259,925	17,477,721	1.2 Dec.
Net railway operating income	31,582,703	37,662,122	16.1 Dec.
Operating ratio—per cent	77.00	74.45	
Rate of return on property investment	1.47%	1.74%	
	Eleven Months Ended November 30		
Total operating revenues	$3,013,940,715	$2,850,273,772	5.7
Total operating expenses	2,246,421,068	2,062,437,196	8.9
Taxes	226,649,708	238,371,895	4.9 Dec.
Net railway operating income	423,117,530	436,485,963	3.1 Dec.
Operating ratio—per cent	74.53	72.36	
Rate of return on property investment	1.72%	1.77%	

C. M. St. P. & P. Establishes Mile-a-Minute Service

The Chicago, Milwaukee, St. Paul & Pacific, on January 3, placed five of its Chicago-Milwaukee trains, a morning and an afternoon train from Chicago and three morning trains from Milwaukee, on schedules of 85 min. for the 85 miles, thus reducing the fast time established last summer by five minutes.

Statistics of Waterways

The Bureau of Railway Economics of the Association of American Railroads has issued as Statistical Summary No. 17 a bulletin designed as a convenient reference for statistics of waterways and waterway operation in the United States, based upon official reports and records, the latest available up to December 1, 1934. The contents include tables on the length of navigable waterways; commerce on rivers, canals, and connecting channels; federal expenditures on rivers, canals, and connecting channels; statistics of carriers by water reporting to the Interstate Commerce Commission; statistics of New York Barge Canal; statistics of traffic on the Great Lakes; and statistics of the Panama Canal.

I. C. C.'s Power Reverse Gear Order Held Invalid

Supreme court bases decision on absence of showing that safe operation requires rule

Affirming the decree of the federal court for northern Ohio, the Supreme Court of the United States on January 7 rendered a decision holding invalid the order of the Interstate Commerce Commission of January 18, 1933, requiring the railroads to equip their locomotives with power reverse gear. The decision was based on the ground that the commission could make an order of the kind only in the interest of safety and that there was an absence of any real finding that safe operation requires the discontinuance of the manual reverse gear and the substitution of power reverse gear. The railroads are particularly interested in the bearing of this decision on the case pending before the commission in which the railroad brotherhoods have asked it to require the equipment of locomotives with automatic stokers.

At the date of the order there were in use in the United States about 31,597 steam locomotives equipped with hand reverse gear and 28,925 equipped with power reverse gear. Prior to the order, Rule 157, which prescribes the reverse gear on locomotives, left it optional with railroads to equip them with either hand operated or power operated reverse gear. The order amended that rule so as to require the railroads to equip "with a suitable type of power operated reverse gear" all steam locomotives built on or after April 1, 1933; and similarly to equip, "the first time they are given repairs defined by the United States Railroad Administration as Class 3, or heavier," all steam locomotives then in road service "which weigh on driving wheels 150,000 pounds or more," and all then used in switching service "which weigh on driving wheels 130,000 pounds or more." The order required that in any event, all such steam locomotives be so equipped before January 1, 1937; and that "air operated reverse gear (including thus power gear already installed) shall have a suitable steam connection" so arranged "that in case of air failure steam may be quickly used to operate the reverse gear."

The order of the commission was entered on a complaint of the Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen and Enginemen. The complaint alleged, in substance, that while power reverse gear is a suitable, safe and practical device, manually operated reverse gear is inherently unsafe and unsuitable in principle and design; that it subjects employees and the traveling public to unnecessary peril; and that the use of locomotives equipped with hand reverse gears violates the boiler inspection act.

Practically all the railroads of the United States were made respondents. They challenged in their answers the jurisdiction of the commission on the grounds that the procedure was unauthorized and that a power reverse gear was not a safety device or appliance within the meaning of the boiler inspection act; denied the essen-

tial allegations of the complaint; and, as additional reason for refusing its prayer, set up the impaired financial condition of the carriers. These issues were referred for hearing to an examiner. Fifty-five days were devoted to the taking of testimony. The witnesses numbered 337. Their testimony covered 6,491 pages. There were introduced, in addition, 109 exhibits, many of them voluminous. The proposed report of the examiner occupies 40 pages of the printed record in the court; and the railroads' exceptions to it, 60 pages. The exceptions were heard by a division of the Commission consisting of three members; and reargument before the whole commission was denied.

The suit to set aside the order was brought by Baltimore & Ohio Railroad and other carriers, suing on behalf of themselves and substantially all the other railroads. The original defendant was the United States. The commission, Grand Chief Johnson of the Brotherhood of Locomotive Engineers and President Robertson of the Brotherhood of Locomotive Firemen and Enginemen are defendants by intervention. The case was heard by the district court, three judges sitting, on a transcript of the record before the commission. The railroads again contended that the commission lacked authority to entertain the complaint. They insisted also that the order was void for lack of essential findings of fact. These objections were overruled, but the court set the order aside on the ground that the commission had acted arbitrarily, in failing to give consideration and legal effect to pertinent, uncontradicted facts having a controlling bearing upon the issues, and in disregarding undisputed evidence. An appeal to the Supreme court by all the defendants was allowed. The opinion by Justice Brandeis includes the following:

"The railroads contend that to support the order certain basic findings are essential; that these were not made; and that, hence, the order is void. This contention is in our opinion sound. The act does not confer upon the commission legislative authority to require the adoption on locomotives of such devices as, in its discretion, it may from time to time deem desirable. The operation of an engine, however equipped, involves some danger to life or limb. At common law the carriers were free to determine how their boilers should be kept in proper condition for use without unnecessary danger. Baltimore & Ohio R. R. Co. v. Groeger, 266 U.S. 521, 529. And the act conferred authority to prescribe by rule specific devices, or changes in the equipment, only where these are required to remove unnecessary peril to life or limb. The power to make the determination whether the proposed device or change is so required, vests in the commission. But its finding to that effect is essential to the existence of authority to promulgate the rule; and as Congress has made affirmative orders of the commission subject to judicial review, The Chicago Junction Case, 264 U.S. 258, 263-265, 5 the order may be set aside unless it appears that the basic finding was made. Florida v. United States, 282 U.S. 194.

"The primary question of fact presented for determination was, as the report of the commission states, whether the use of locomotives equipped with hand reverse gear, as compared with power reverse gear, causes unnecessary peril to life or limb. The report discusses, at some length, the alleged advantages and disadvantages of the two classes of reverse gear and the expense which the proposed change would entail; and concludes with findings that, to a certain extent, the change should be made. But whether the use of any or all types of steam locomotives equipped with hand reverse gear as compared with power reverse gear causes unnecessary peril to life or limb, is left entirely to inference. This complete absence of 'the basic or essential findings required to support the commission's order' renders it void."

Railway Employment in December

The number of employees of Class I railroads as of the middle of the month of December, according to reports to the Interstate Commerce Commission, was 960,769, a decrease of .57 per cent as compared with the number in December, 1933, and a decrease of 1.88 per cent as compared with the number in November. This represents 53.8 per cent of the average for 1923-1925.

Disastrous Collision in Russia

Press dispatches of January 7 reported a rear collision of southbound passenger trains on the railroad from Leningrad to Moscow, at Torbine, 130 miles south of Leningrad, in which three cars were destroyed by fire and seven others were wrecked. The temperature at the time was 25 deg. below zero, and the track was not cleared for 13 hours. Latest estimates gave the number of persons killed as 23, and seriously injured, 56.

Three-Car U. P. Streamlined Train in Service January 31

The Union Pacific on January 31 will place its three-car streamlined train in regular service between Salina, Kan., and Kansas City, Mo., on a 3½-hr. schedule for the 187 miles. The train will leave Salina at 7 a. m. and will arrive at Kansas City at 10:30 a. m.; returning it will leave Kansas City at 4 p. m. and arrive at Salina at 7:30 p. m.

The six-car and two nine-car streamlined trains will be placed in service between Chicago and the Pacific Coast in May.

Railroad Credit Corporation Has Returned 28 Per Cent

The Railroad Credit Corporation, according to a report as to its financial condition filed with the Interstate Commerce Commission, has, through liquidating distributions since termination of its lending period on June 1, 1933, returned $20,627,178 or 28 per cent of the net emergency freight revenues collected by it. Of this amount, $9,097,729 has been in cash and $11,529,449 in credits on obligations due the corporation. Of the 13 liquidating distributions made by The Railroad Credit Corporation, nine distributions amounting to $13,201,185, or 18 per cent of the net fund, were made in the calendar year of 1934, the last one having been made on December 31 in the amount of $735,993 or 1 per cent. Payments to the corporation in December consisted of $284,208 in reduction of loans, $105,052 for interest, $3,592 dividends on investments, $27,197 from a carrier now in receivership in settlement of a prior emergency revenue balance, and $41 from miscellaneous sources, a total of $420,090.

Florida Arrow Placed in Service

A telegraphic impulse, flashing over more than 1,000 miles of line from Tallahassee, Fla., to Chicago, signalized the start of the "Florida Arrow" of the Pennsylvania when it left Chicago for the South on January 2 on a schedule of 27 hr. 10 min. to Jacksonville and 27 hr. northbound. Governor David D. Scholtz, at Tallahassee, pressed a button to flash an impulse over wires which caused the bell of the "Florida Arrow's" locomotive at Chicago to ring, to give the signal to start the first trip. For the inaugural ceremonies, in which civic leaders and officers of the Pennsylvania participated, the train gates at the Union station were decorated with fruit-laden branches of orange and grapefruit trees, Spanish moss and palms.

Appropriation of $5,850,656 Proposed for I. C. C.

An appropriation of $5,850,656 for the Interstate Commerce Commission for the fiscal year 1936 is recommended in the report of the House appropriations committee on the independent offices appropriation bill submitted to the House on January 9. This is the amount recommended in the Budget estimate and represents an increase of $419,686 as compared with the amount appropriated for the present fiscal year, but the difference is mainly accounted for by the proposed restoration of the present 5 per cent reduction in salaries of government employees. The bill provides for $2,796,465 for general administrative expenses, $851,976 for regulating accounts, $514,195 for safety inspection, $39,682 for signal safety systems, $482,238 for locomotive safety inspection, $1,041,100 for valuation, and $125,000 for printing and binding.

"Big Four" Union Leaders in Canada Oppose St. Lawrence Plan

Continued opposition to the St. Lawrence deep waterways project, approval of the Government's relief efforts and endorsement of a contributory Dominion unemployment insurance act, were features of the proposals submitted to Prime Minister R. B. Bennett of Canada and his associates in Ottawa last week by the joint legislative committee of the railway transportation brotherhoods.

After nearly two hours discussion with the Government heads the delegation left with assurances that their proposals would "be given consideration."

The railway unionists urged that the Senate's power to veto legislation be suspended in respect to a bill that has passed the Commons twice; and that the scope of federal authority be broadened to enable it to enact social legislation for the benefit

of the people as a whole and to regulate highway transport as a work "for the general advantage of Canada."

Other legislation requested would provide compensation for loss of property of employees forced to move because of the abandonment of railway division points, stations and mileage; require at least two men on all units of motive power and increase the Dominion treasury contribution to the grade crossing elimination fund from $200,000 annually as at present, to $500,000.

The St. Lawrence deep waterways scheme was considered untimely, adverse to the improvement of employment in both United States and Canada, unnecessary because of the existence of adequate transportation facilities sufficient for years to come, a source of increased taxation which would be borne by the very people it would throw out of employment, and destructive to the present railway system.

Small Increase in Carloading Expected

Freight car loadings in the first quarter of 1935 are expected to be about six-tenths of one per cent above actual loadings in the same quarter in 1934, according to estimates just compiled by the thirteen Shippers' Regional Advisory Boards. On the basis of these estimates, car loadings of the 29 principal commodities will be 4,528,744 cars in the first quarter of 1935, compared with 4,500,200 actual loadings for the same commodities in the corresponding period last year.

Six of the 13 Shippers' Regional Advisory Boards estimate an increase in the loadings for the first quarter of 1935 compared with the same period in 1934 while seven estimate a decrease. The tabulation below shows the total loading for each district for the first quarter of 1934, the estimated loadings for the first quarter of 1935, and the percentage of increase or decrease.

Shippers' Advisory Boards	Actual Loadings 1934	Estimated Loadings 1935	Per Cent Increase
Allegheny	706,750	741,439	4.9 Inc.
Pacific Coast	149,504	157,168	5.1 "
Pacific Northwest	118,760	128,088	7.9 "
Southeast	451,898	468,547	3.7 "
Southwest	284,922	290,132	1.8 "
Great Lakes	245,066	276,517	12.8 "
Atlantic States	591,962	573,040	3.2 Dec.
Central Western	191,720	175,243	8.6 "
New England	125,747	114,540	8.9 "
Northwest	142,967	122,456	14.3 "
Trans-Missouri-Kansas	249,655	245,599	1.6 "
Mid-West	660,670	659,678	0.2 "
Ohio Valley	580,579	576,297	0.7 "
Total	4,500,200	4,528,744	0.6 Increase

Of the 29 commodities covered in the forecast, it is estimated that 19 will show an increase, and 10 a decrease, in the first quarter in 1935.

The 19 for which an increase is estimated are: flour, meal and other mill products; citrus fruits; other fresh fruits; coal and coke; ore and concentrates; gravel, sand and stone; salt; lumber and forest products; sugar, syrup and molasses; iron and steel; machinery and boilers; cement; brick and clay products; lime and plaster; agricultural implements and vehicles other than automobiles; automobiles, trucks and parts; fertilizers, all kinds; paper, paper board and prepared roofing and chemicals and explosives.

Outlook for Railroad Purchases Depends on Future Transport Policy

The National Resources Board has made public a report of its Land Planning Committee, which, under a section devoted to "The Outlook for Industrial Conditions and Employment," includes the following regarding the outlook for railroad purchases:

"Railway traffic, owing to competition of other forms of transportation and changes in industrial production and technique, has been declining relative to physical volume of production for a number of years with a much sharper reduction after 1930. Part of this loss may therefore be expected to be recouped during the next few years, but, if so, it might be at the expense of employment in competing transportation. While the outlook for railroad purchases depends very much on the arrangements to be worked out by the governmental agencies and railway management, without a marked change in fundamental policy the program of maintenance and equipment purchases by railroads during the next three to five years will have to be held at a minimum unless traffic volumes prove larger than now seems probable. We must reckon with the possibility, therefore, that this industry will afford little support to general industrial activity, particularly steel and railway equipment, and will be an adverse influence in the financial situation.

"The real contribution of the railroads to business revival depends upon the program of maintenance and equipment purchases during the next few years. The present tendency in view of current low earnings is to hold these capital expenditures down to a minimum and to seek improved earnings through raising still further out of line the general level of freight rates. There are, however, possibilities for potent contribution to industrial revival in a broad program of re-equipment along modern lines. This new investment would be amply justified by the reduced costs of operation. To be really effective in restoring and maintaining general industrial activity, such a program would need to be of substantial proportions and would probably need government support of some sort. The promotion of re-employment through this means apparently awaits the enunciation of the general outlines of the future national policy with respect to the railroads and other forms of transportation."

No Present Solution to Canada's Rail Problem

Under present business conditions there is no solution of Canada's railway problem and no one has yet come forward with a solution, Minister of Railways R. J. Manion said in a speech in Brockville, Ontario, last week. Amalgamation of the Canadian National and Canadian Pacific, he said, was not a solution.

Dr. Manion defined the railway problem as the provision of money to meet the interest on the Canadian National debt over and above the amount of the railways' earnings. In 1934 the C. N. R. earned little more than its operating expenses and the government had to provide a balance of interest to bondholders of some $50,000,000 not including interest due the government of $32,000,000.

Railway earnings, however, Dr. Manion said, are improving although they have a long way to go yet before reaching normal. With a real revival of business railway traffic would return to normal and an accurate picture of the situation could be obtained.

"There seems to be a fairly widespread opinion, particularly among business men," said Dr. Manion, "that, through amalgamation or unification of the Canadian National and Canadian Pacific, the Canadian National deficit can be wiped out. It is true that those who propose this policy claim that by it savings could be made estimated by different authorities from a low of $15,000,000 per year to a top figure of possibly $75,000,000. But those who have mentioned $75,000,000 savings do not claim any such savings as possible this year, but only at some unknown year in the future, when railway traffic has rebounded to that of really prosperous times. Let that be clearly understood.

"May I say at once that after deep study of the subject and a great deal of discussion with good authorities (and keeping in mind that both great railway systems have in the past four years brought about immense economies of all kinds) my own view is that at the present time, under present business and railway traffic conditions, only a very small fraction—perhaps one-quarter—of the greater figure mentioned could be saved by amalgamation or unification.

"Then remember that whatever savings might be made would have to be divided between the Canadian Pacific and Canadian National, with probably the Canadian Pacific asking the greater share, because of its excellent earning record in the past.

"Therefore it is obvious that no one has made any proposal by which any worthwhile part of our deficit could be saved under present conditions."

Equipment and Supplies

LOCOMOTIVES

THE SOROCABANA RAILWAY has ordered four of the 4-10-2 type locomotives from the American Locomotive Company. These locomotives will be of meter gage and will have three cylinders; 18½ in. by 24 in. outside, 18½ by 22 in. inside, and 48 in. driving wheels. Dr. L. Orsini is traffic manager, Sao Paulo, Brazil.

MOTOR VEHICLES

THE BURLINGTON TRANSPORTATION COMPANY has ordered 10 modern streamlined motor coaches from the General Motors Corporation.

Supply Trade

New Officers of National Malleable & Steel Castings Company

Henry F. Pope, who was elected chairman of the board of the National Mal-

Henry F. Pope

leable & Steel Castings Company, Cleveland, Ohio, had served as president of the company for the last 21 years. Mr. Pope entered the employ of the company

Carl C. Gibbs

on July 1, 1884, and had completed 50 years of service at the time of his recent election as chairman of the board.

Carl C. Gibbs, who has been elected president of the National Malleable & Steel Castings Company, began his employment with the company in 1905, as a salesman at its Indianapolis (Ind.) plant. In 1919 he was made sales manager of the Cleveland plant and the following year returned to Indianapolis as manager of the plant at that place. For the last five years Mr. Gibbs has been located in the general office at Cleveland as assistant to the president.

The ParCar Corporation, will move its office from 230 Park avenue to 75 West street, New York.

The Vapor Car Heating Company, Inc., Chicago, on January 1, discontinued its Boston, Mass., office; all matters in that district will hereafter be handled through the New York office.

The Sinclair Refining Company, Headley Asphalt division, New York, has appointed the **Maloney Oil & Manufacturing Company,** Scranton, Pa., exclusive railway sales agents in the eastern part of the United States for the sale and distribution of Headley asphalt emulsions.

Col. E. A. Deeds of New York and Dayton, Ohio, was elected a director of **The American Rolling Mill Company** at a meeting of the board of directors held at the office of the company in Middletown, Ohio, on January 7, 1935. This fills the vacancy occurring through the death of **James P. Orr** of Cincinnati.

Lyle I. Martin, formerly connected with the Pettibone Mulliken Company, and more recently with the engineering department of the Chicago & North Western, has become associated with the **Morden Frog & Crossing Works** in the engineering, service and sales department, with headquarters at Chicago.

A. B. Jacobus, manager of general scale sales of **Fairbanks, Morse & Co.,** with headquarters at Chicago, has been promoted to general manager of **E. & T. Fairbanks & Co.,** with headquarters at St. Johnsbury, Vt., and has been succeeded by **George C. Worthley,** manager of the scale department in the New York branch.

Following the acquisition of the **Pullman-Bradley Car Corporation,** the **Richmond Car Corporation,** the **Dickson Car Wheel Company** and the **New Orleans Car Wheel Company, Inc.,** by the **Standard Steel Car Corporation,** this company has been absorbed by the **Pullman Car & Manufacturing Corporation** and the latter's name changed to the **Pullman-Standard Car Manufacturing Company.**

Griswold Price, assistant manager of sales of the St. Louis district of the **Illinois Steel Company,** the **Carnegie**

Griswold Price

Steel Company, and the **Tennessee Coal, Iron & Railroad Company,** has been promoted to manager of sales for these companies, with the same headquarters. He graduated from Northwestern university in 1919 and entered the employ of the Illinois Steel Company in July of that year. After spending one year at the Gary, Ind., and South Chicago plants of this company, he was employed in the Chicago district sales office and general sales department from July, 1920 to June 1, 1931. On the latter date he was appointed assistant manager of sales of the St. Louis district, which position he has held until his recent promotion.

OBITUARY

S. P. McGough, who retired as western sales agent of the Lorain Steel Company, with headquarters in Chicago, in 1932, died in that city on January 3, following a heart attack. He was born at Franklin, Pa., on February 26, 1874, and entered railway service in 1894 as a rodman for the Baltimore & Ohio. He became associated with the Lorain Steel Company in 1902, and in 1923 was appointed western sales agent, which position he held until his retirement. He was elected president of the National Railway Appliances Association in March, 1929, serving in that capacity for one year.

J. H. Larmonth, who had been manager of The Rail Joint Company of Canada, Ltd., Montreal, Canada, for a great many years, died on January 3, at the age of 63. Mr. Larmonth was graduated from McGill University in 1894 with the degree of bachelor of science and then for about a year was connected with the mechanical department of the Grand Trunk Railway. He subsequently served with a number of industrial companies and in charge of street railways. During the war he was connected with the Imperial Munitions Board as superintendent of the steel department. In 1922, he became interested in the railway supply business and represented a number of companies, later becoming president of Engineering Materials, Ltd.

Construction

LIVE OAK, PERRY & GULF.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of an extension from Foley Junction, Fla., to Swan, 20 miles. Later an amendment to the application was filed stating that it is proposed to purchase from the Brooks-Scanlon Company a logging road of 10.75 miles from Foley Junction and to construct the remaining 10 miles to Swan.

SEABOARD AIR LINE.—The receivers have applied to the Interstate Commerce Commission for a certificate authorizing the construction of a branch line of 7½ miles from a point near Jacksonville, Fla., to Dames Point.

Financial

ATCHISON, TOPEKA & SANTA FE.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon that portion of a branch line extending from Elsinore, Calif., to Temecula, 16.5 miles.

NEW YORK, PENNSYLVANIA & OHIO.—*Bonds.*—The Nypano Railroad and the Erie have applied to the Interstate Commerce Commission for authority to extend for 15 years the maturity date of $8,000,000 of New York, Pennsylvania & Ohio prior lien mortgage 4½ per cent bonds, which have already been extended to March 1, and to reduce the interest rate to 4 per cent. It is also proposed to pay $1 for each bond.

ST. LOUIS-SAN FRANCISCO.—*Abandonment.*—The Interstate Commerce Commission has authorized this company and its trustees to abandon portions of the line formerly owned by the Kansas City, Clinton & Springfield extending from Stanley, Kans., southeasterly to Clinton, Mo., via Belton, and from Tracy Junction, Mo., to Phenix—an aggregate of 110.3 miles; reason, truck competition. The authority for abandonment is conditioned upon the willingness of the Frisco to sell the lines to local interests at salvage value and to permit them trackage rights to connect the two segments of the former K. C., C. & S.

ST. LOUIS-SAN FRANCISCO.—*Receivership.*—The federal district court at St. Louis has been asked by Special Master John P. Harding to rule on three points before the Master proceeds further in investigating the solvency of the railroad. These three points include a ruling by the court on the question of whether the proceedings are premature or seasonable, on the date to be employed in the determination of the question of solvency or insolvency and on the principles or standards of valuation to govern the inquiry. The Master has found it injudicious to proceed further with the inquiry asked by the Interstate Commerce Commission until a ruling on the three points has been made.

WABASH.—*R.F.C. Loan.*—The receivers have applied for a five-year extension of the loans from the Reconstruction Finance Corporation amounting to $15,731,583 and also for an extension of the maturity date of a like amount of receivers' certificates pledged as collateral for the loans.

Average Prices of Stocks and of Bonds

	Jan. 8	Last week	Last year
Average price of 20 representative railway stocks..	36.83	36.09	39.10
Average price of 20 representative railway bonds..	76.56	75.86	69.58

Dividends Declared

Carolina, Clinchfield & Ohio.—$1.00, quarterly; Stamped Certificates, $1.25, quarterly, both payable January 21 to holders of record January 10.

St. Louis, Rocky Mountain & Pacific.—Common, $.25, quarterly; Preferred, $1.25, quarterly, both payable January 21 to holders of record January 5.

Virginian.—Preferred, $1.50, quarterly, payable February 1 to holders of record January 19.

Railway Officers

EXECUTIVE

N. Bassols has been elected chairman of the board of directors of the National Railways of Mexico, with headquarters at Mexico, D. F., succeeding **M. R. Gomez.**

FINANCIAL, LEGAL AND ACCOUNTING

Upon invitation of the Law Committee of the Association of American Railroads, **E. E. Fairweather,** head of the legal department of the Canadian National, has become a member of that committee.

W. R. Patterson, general auditor of the Canadian Pacific, with headquarters at Montreal, Que., has been promoted to deputy comptroller, with the same headquarters, succeeding **E. A. Leslie,** promoted. **C. E. Marchell,** chief of the joint facilities bureau, has been appointed general auditor, succeeding Mr. Patterson.

G. B. Perkins, assistant chief accounting officer of the St. Louis-San Francisco, with headquarters at St. Louis, Mo., has been promoted to chief accounting officer, succeeding **Edward H. Bunnell,** whose election as vice-president in charge of the Department of Finance, Accounting, Taxation and Valuation of the Association of American Railroads was noted in the *Railway Age* of December 8. **R. V. Hart** has been appointed assistant to the chief accounting officer, with headquarters at St. Louis, Mo.

OPERATING

C. H. Brown, assistant superintendent on the Saskatoon division of the Canadian National, with headquarters at Saskatoon, Sask., has been transferred to the Prince Albert division, with headquarters at North Battleford, Sask., succeeding **J. D. Healy,** who has been transferred to Prince Albert, Sask., on the same division, to replace **O. J. Rowe,** who has been transferred to Saskatoon to succeed Mr. Brown.

Glenn W. Curtis, trainmaster on the Western Pacific, with headquarters at Wendover, Utah, whose promotion to superintendent of the Eastern division, with headquarters at Elko, Nev., was noted in the *Railway Age* of December 1, was born on December 4, 1891, at Watsonville, Cal. He entered railway service with the Western Pacific on September 12, 1910, as an extra gang timekeeper, and served in this position and as roadmaster's and trainmaster's clerk, division engineer's clerk, secretary to general superintendent, secretary to the general manager and secretary to the president successively until August, 1920, when he was appointed trainmaster of Subdivisions 3 and 4 of the Eastern division, at Wendover. During the next 14 years Mr. Curtis served as trainmaster at various points, being located at Wendover at the time of his recent promotion to superintendent.

G. H. Baillie, assistant to the assistant general manager of the Canadian Pacific, with headquarters at Vancouver, B. C., has been appointed assistant superintendent of the Lethbridge division, with headquarters at Lethbridge, Alta., succeeding **E. McCracken.** Mr. McCracken has been transferred to the Vancouver division, with headquarters at North Bend, B. C., where he replaces **W. J. McLean,** whose promotion to superintendent was noted in the *Railway Age* of December 15, 1934 **F. M. Rutter,** assistant district engineer of the British Columbia district, at Vancouver, has been appointed assistant to the assistant general manager, with the same headquarters, succeeding Mr. Butler. Mr. Rutter will continue to discharge the duties of assistant district engineer.

TRAFFIC

J. Macfarlane has been appointed general agent, passenger department, of the Canadian Pacific with headquarters at Victoria, B. C., succeeding **L. D. Chetham,** who has retired.

Eugene N. Crowson, city freight agent for the Illinois Central at St. Louis, Mo., has been appointed foreign freight agent, with the same headquarters, to succeed **Charles C. Cameron, Jr.,** deceased.

S. E. Corbin, general agent, passenger department, for the Canadian Pacific, at Atlanta, Ga., has been transferred to Cincinnati, Ohio, succeeding **K. A. Cook,** who has been transferred to the steamship passenger department at Chicago.

P. S. Smith, has been appointed acting general agent for the Union Pacific System, with headquarters at Atlanta, Ga., pending the return of **W. C. Elgin,** who is on an extended leave of absence because of ill health.

H. R. Sampson, manager of the travel bureau of the Chicago & Eastern Illinois, at Chicago, has been appointed general agent, passenger department, with the same headquarters, succeeding **W. E. Callender,** whose appointment as assistant passenger traffic manager was noted in the *Railway Age* of December 29, 1934.

E. C. Bywater, general agent of the Chicago Great Western at Cincinnati, Ohio, has been appointed assistant general freight agent at Kansas City, Mo., succeeding **C. R. Gregg,** who has been transferred to Chicago. **F. P. Wagner,** assistant general agent at Chicago, has been promoted to general agent at Cincinnati replacing Mr. Bywater. **R. M. Houston,** traffic agent at Dallas, Tex., has been appointed general agent at Houston, Tex., succeeding **J. H. Cummings,** who has been transferred to Omaha, Neb., to replace **H. T. Minkler,** assistant general agent, who has been appointed general agent at Dubuque, Iowa, succeeding **W. L. Seeley,** who has been appointed as-

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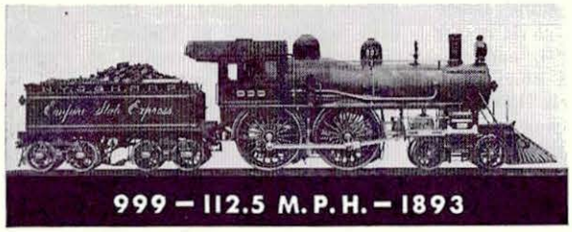

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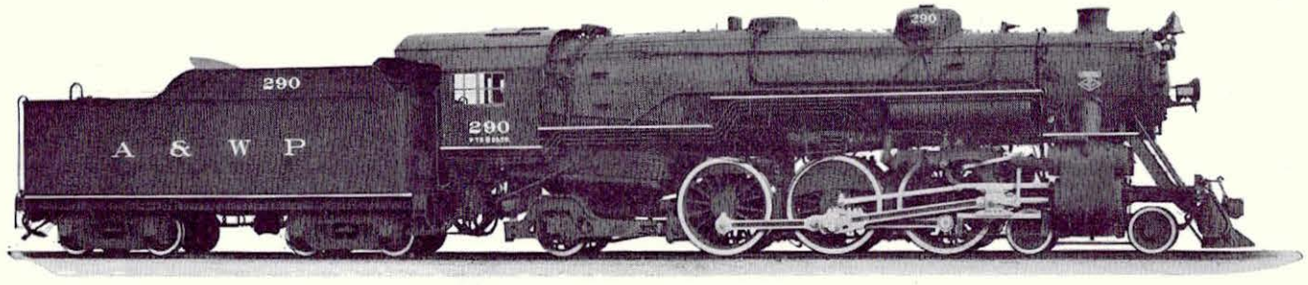

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sistant general agent at St. Paul, Minn. **C. G. Stewart,** traffic agent at Kansas City, Mo., has been appointed general agent at Waterloo, Iowa, succeeding **A. J. Howard. G. H. Shields,** traffic agent at Kansas City, has been appointed general agent with the same headquarters. **C. A. Howe,** assistant general agent at Los Angeles, Cal., has been appointed general agent with the same headquarters, succeeding **C. J. Chisam,** who has been appointed special representative with the same headquarters.

John K. Dent, assistant general freight agent on the Louisville & Nashville, with headquarters at Louisville, Ky., has been appointed assistant to the vice-president in charge of traffic, with the same headquarters, to succeed **Joseph G. Kerr,** who has resigned to accept a position with the Association of American Railroads. **Edward J. Cottom,** chief clerk in the general freight department, has been promoted to assistant general freight agent at Louisville, to succeed Mr. Dent. **G. A. Van Gieson,** commercial agent at New York, has been promoted to general agent at St. Louis, Mo., succeeding **W. L. Evans,** deceased.

ENGINEERING AND SIGNALING

Following the consolidation of the Kansas and St. Louis divisions of the Chicago, Rock Island & Pacific, to form the Kansas-St. Louis division, **C. C. Cunningham,** division engineer of the Kansas division, has had his jurisdiction extended to include the St. Louis division, and his headquarters have been moved from Herington, Kan., to Kansas City, Mo. **F. Nugent,** trainmaster at Manley, Iowa, has been appointed division engineer of the Cedar Rapids-Dakota division with headquarters at Cedar Rapids, Iowa, succeeding **W. E. Heimerdinger,** who has been assigned to other duties.

MECHANICAL

W. Walker, acting superintendent of motive power and car equipment on the Canadian National, with headquarters at Edmonton, Alta., has been appointed superintendent of motive power and car equipment at that point.

PURCHASES AND STORES

T. A. Stinson, storekeeper of the Green Bay & Western, with headquarters at Green Bay, Wis., has had his title changed to general storekeeper.

OBITUARY

R. Fitzgerald, who retired 13 years ago as president of the Chicago Junction, died on January 6 of pneumonia at Los Angeles, Cal.

Joseph F. Keany, general solicitor of the Long Island, died on January 7 of heart trouble at his home in Brooklyn, N. Y. Mr. Keany was born in Brooklyn on April 9, 1867, and was associated with the law department of the Long Island for 40 years. He became a clerk in the legal department in July, 1894, and was promoted to the positions of chief clerk and junior attorney in March, 1896. In January, 1904, Mr. Keany became head of the law department with the title of attorney and was appointed general solicitor in July, 1916.

B. M. McDonald, division engineer of the Buffalo division of the New York Central, with headquarters at Buffalo, N. Y., died in that city on December 31, 1934.

E. B. Blair, who retired in 1933 as eastern traffic manager of the Mobile & Ohio, with headquarters at New York, died on December 11 at his home at Humboldt, Tenn.

W. H. Guild, assistant superintendent on the Oregon-Washington Railroad & Navigation Co., with headquarters at Walla Walla, Wash., died on January 5 as the result of injuries sustained in a fall.

E. J. Tice, assistant superintendent of transportation of the Norfolk & Western, with headquarters at Roanoke, Va., was shot to death on January 3 in his office by a clerk in the department.

John M. Doyle, general agent on the Great Northern at Spokane, Wash., and formerly division superintendent with the same headquarters, died on January 6 of a heart attack.

Charles Lapham, assistant engineer on the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Milwaukee, Wis., and formerly district engineer at the same point, died suddenly on January 8. Mr. Lapham had been connected with the Milwaukee continuously for more than 55 years. He was born on February 10, 1857, and received his engineering education at the University of Wisconsin. He entered the service of the Milwaukee in 1879 as a rodman and was advanced through various positions in the engineering department to that of district engineer at Milwaukee in 1910. In 1919 Mr. Lapham was assigned to special duties and given the title of assistant engineer, which he held until his death.

William M. Rhett, who retired two years ago as general foreign agent of the Illinois Central, died on January 6 at St. Luke's hospital, Chicago, following an operation. Mr. Rhett was born in South Carolina and entered the service of the Illinois Central in 1888. In 1905 he was appointed general freight agent in charge of foreign traffic at Chicago, and in 1918 he was made assistant to the freight traffic manager. During the World War he served with the United States Railroad Administration, and when the railroads were returned to private control in 1920 he was made general foreign agent of the Illinois Central, holding this position until his retirement. At the time of his death, he was vice-chairman of the Southern Ports Foreign Freight committee.

Thomas E. Hill, superintendent of the Kentucky division of the Illinois Central, with headquarters at Paducah, Ky., died on January 7 in a hospital at Paducah, following a heart attack. Mr. Hill was born on March 6, 1871, at Lynchburg, Va., and attended Virginia Military Institute. He entered railway service in 1897 as a track apprentice on the Illinois Central, later serving as a chainman and then as a rodman in the engineering department. In 1899, Mr. Hill was advanced to assistant engineer and four years later he was further promoted to roadmaster of the Tennessee division, being transferred to the Louisiana division in 1906. In June, 1907, he was promoted to superintendent of the same division, being transferred to the Kentucky division in November, 1915.

Charles Henry Stein, assistant to the president of the Central of New Jersey, with headquarters at New York, died on January 3 at Muhlenberg Hospital, Plainfield, N. J., after a short illness. Mr. Stein was born in Baltimore, Md., on July 23, 1871, and was graduated from Baltimore City College in June, 1889. He entered railroad service in 1889, with the Western Maryland, as an instrument man and assistant engineer. Mr. Stein served as assistant roadmaster of the Western Maryland from 1893 to 1903 and from the latter date until 1907 he was, successively, assistant supervisor and supervisor for the Philadelphia & Reading (now Reading). In 1907 Mr. Stein was appointed engineer maintenance of way for the Central of New Jersey, and in 1914 he became superintendent. He became assistant to the general manager for the Philadelphia & Reading and the Central of New Jersey in 1918 and in 1920 he was appointed assistant to the president of the Central of New Jersey. From 1922 until 1926 he was general manager of the Central of New Jersey, being appointed assistant to senior vice-president on the latter date. He was appointed assistant to the president in 1926. Mr. Stein was a member of the New York Railroad Club, the American Society of Civil Engineers, the Society of Terminal Engineers, the American Association of Railroad Superintendents and the American Railway Engineering Association.

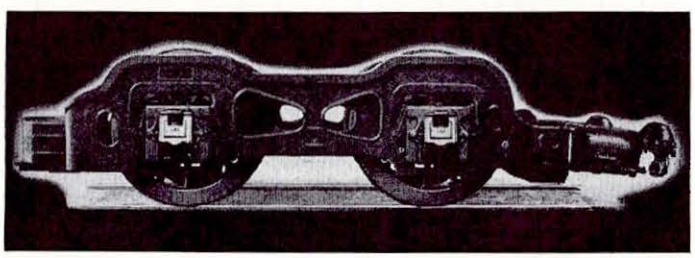
Blank & Stoller

C. H. Stein

Tables of Revenues and Expenses of Railways begin on next left-hand page

THE BOOSTER

IS ESSENTIAL WITH AIR CONDITIONED EQUIPMENT



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In any budget for air conditioning include The Locomotive Booster as a necessary factor.

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NEW YORK CHICAGO MONTREAL

Revenues and Expenses of Railways

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1934

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1933
Akron, Canton & Youngstown	Nov.	171	$122,359	$29	$128,219	$19,512	$12,872	$7,925	$42,420	$10,438	$93,059	72.6	$35,160	$25,477	$15,632	$21,227
	11 mos.	171	1,478,067	404	1,572,199	235,040	157,229	83,560	481,382	96,012	1,052,512	66.9	519,687	405,602	250,227	294,932
Alton	Nov.	949	685,276	114,335	948,590	143,011	152,857	37,558	410,280	40,135	789,776	83.3	158,814	83,453	—68,900	82,812
	11 mos.	949	8,865,934	1,569,623	12,105,304	1,908,547	1,822,668	489,819	4,699,878	458,232	9,491,811	78.4	2,613,493	1,806,292	211,535	1,501,148
Atchison, Topeka & Santa Fe	Nov.	9,517	6,971,605	776,029	8,656,085	1,088,891	2,329,929	345,127	3,045,398	511,077	7,320,346	84.6	1,335,739	659,714	761,481	1,812,688
	11 mos.	9,537	80,183,316	10,059,059	99,078,090	12,199,987	24,254,513	3,400,758	33,334,479	4,625,059	77,859,001	78.6	21,219,089	12,671,600	13,787,130	11,833,689
Gulf, Colorado & Santa Fe	Nov.	1,918	858,630	60,368	998,728	198,829	177,831	41,440	407,688	79,674	905,085	90.6	93,643	52,382	—13,360	168,600
	11 mos.	1,918	9,688,714	543,538	11,065,196	2,099,319	2,387,755	492,695	4,277,823	754,286	10,008,552	90.5	1,056,644	185,972	—610,367	—171,754
Panhandle & Santa Fe	Nov.	1,878	613,623	34,175	695,705	69,089	102,556	15,364	211,036	41,493	439,533	63.2	256,172	212,321	151,298	249,756
	11 mos.	1,878	7,398,780	285,489	8,209,966	915,591	1,475,068	180,677	2,337,659	386,888	5,294,918	64.5	2,915,048	2,426,857	1,692,095	1,229,680
Atlanta & West Point	Nov.	93	82,353	17,258	121,568	14,958	25,338	6,952	50,404	5,649	105,745	87.0	15,823	8,612	—7,696	—23,965
	11 mos.	93	890,618	188,965	1,293,056	206,042	286,856	74,084	542,926	81,337	1,215,889	94.0	77,167	—2,197	—126,951	—208,895
Western of Alabama	Nov.	133	79,089	18,471	113,391	18,324	30,549	6,944	44,276	6,233	108,370	95.6	5,021	—2,976	2,602	—8,372
	11 mos.	133	845,550	195,916	1,192,472	218,542	336,734	74,624	485,060	74,412	1,209,033	101.4	—16,561	—104,606	—36,438	—89,031
Atlanta, Birmingham & Coast	Nov.	639	195,863	7,820	232,567	42,090	48,016	21,771	97,199	20,420	239,513	102.9	—6,946	—21,445	—35,683	—19,470
	11 mos.	639	2,197,464	76,647	2,585,145	452,848	545,852	232,864	1,078,712	194,955	2,613,317	101.0	—28,172	—168,447	—289,973	—234,655
Atlantic Coast Line	Nov.	5,147	2,420,380	323,548	3,111,170	329,710	658,628	119,084	1,208,622	130,160	2,451,630	78.8	659,540	534,058	508,359	382,501
	11 mos.	5,145	27,389,136	4,585,323	36,152,688	4,523,216	7,231,712	1,239,634	13,566,882	1,415,270	28,264,662	78.2	7,888,026	4,425,529	3,784,826	3,736,899
Charleston & Western Carolina	Nov.	342	145,557	1,262	151,350	19,270	25,233	6,140	53,677	4,497	108,817	71.9	42,533	30,533	30,972	25,840
	11 mos.	342	1,701,648	15,376	1,765,200	250,402	271,416	62,676	584,100	52,512	1,221,106	69.2	544,094	369,461	350,512	394,600
Baltimore & Ohio	Nov.	6,445	8,856,427	700,470	10,306,319	915,834	1,871,247	335,544	3,844,472	535,490	7,592,878	73.7	2,713,441	2,055,928	1,596,589	1,539,349
	11 mos.	6,395	107,452,645	9,262,252	125,013,504	10,996,129	25,853,469	3,888,411	43,573,430	6,131,485	91,504,856	73.2	33,508,648	26,220,450	21,902,818	27,222,678
Staten Island Rapid Transit	Nov.	23	40,488	69,861	118,713	13,808	12,971	1,684	87,984	12,631	129,078	108.7	—10,365	—27,017	—53,700	—9,460
	11 mos.	23	556,773	889,636	1,538,603	133,237	145,734	18,809	891,170	141,357	1,330,307	86.5	208,296	32,887	—176,738	20,912
Bangor & Aroostook	Nov.	603	586,474	13,430	624,771	71,156	83,543	5,629	123,323	29,960	314,184	50.3	310,587	252,907	232,240	155,576
	11 mos.	603	5,226,268	247,477	5,684,614	1,005,788	957,872	53,089	1,301,205	283,611	3,610,661	63.5	2,073,953	1,590,840	1,579,235	1,557,063
Bessemer & Lake Erie	Nov.	225	553,207	746	561,449	55,562	286,914	10,990	132,945	45,037	530,875	94.6	30,574	—319	18,266	54,623
	11 mos.	225	7,885,176	8,013	7,979,057	1,095,751	3,080,133	121,102	1,576,626	420,536	6,292,045	78.9	1,687,012	1,365,746	1,477,480	1,745,576
Boston & Maine	Nov.	2,038	2,387,423	468,299	3,347,976	412,773	439,836	52,419	1,410,248	161,165	2,475,493	65.0	872,483	659,594	495,275	456,086
	11 mos.	2,047	26,884,375	6,176,387	38,665,072	5,226,292	5,544,112	652,516	15,580,788	1,850,011	28,949,586	74.9	9,715,486	7,494,307	5,703,398	6,649,105
Brooklyn Eastern District Terminal	Nov.	11.27	74,177	.....	76,417	6,032	11,358	323	23,816	5,731	47,260	61.8	29,157	.....	22,554	20,777
	11 mos.	11.27	859,815	.....	882,697	51,611	100,527	3,662	283,836	57,938	497,574	56.4	385,123	.....	313,067	317,402
Burlington-Rock Island	Nov.	280	51,924	3,367	59,514	12,084	12,111	4,285	42,067	8,961	79,508	133.6	—19,994	—25,916	—34,553	10,913
	11 mos.	280	654,250	28,516	729,930	142,232	144,012	42,973	424,537	87,351	841,067	115.2	—111,137	—185,013	—260,196	—30,885
Cambria & Indiana	Nov.	37	88,371	.....	88,515	8,363	129,774	366	11,459	6,873	156,835	177.18	—68,320	—71,033	—8,590	81,336
	11 mos.	37	953,594	.....	955,950	87,429	634,350	4,200	139,360	74,412	939,751	98.31	16,199	—114,928	599,387	861,469
Canadian Pacific Lines in Maine	Nov.	233	106,607	12,560	131,398	14,991	27,261	8,422	52,065	5,509	108,945	82.9	22,453	16,453	4,618	—8,628
	11 mos.	233	1,486,121	172,916	1,803,374	360,611	335,165	96,727	703,523	61,719	1,565,277	86.8	238,097	168,055	—44,960	—109,548
Canadian Pacific Lines in Vermont	Nov.	85	46,118	7,210	66,252	10,528	16,446	3,742	49,121	4,640	84,741	127.9	—18,489	—23,590	—38,499	—21,863
	11 mos.	85	583,206	111,114	853,095	168,650	214,557	43,096	576,710	49,280	1,055,493	123.7	—202,398	—258,518	—437,206	—357,998
Central of Georgia	Nov.	1,926	931,901	89,478	1,141,050	110,069	214,010	50,137	475,752	94,509	947,966	83.1	193,084	121,559	87,552	1,491
	11 mos.	1,926	9,841,845	1,040,769	12,273,804	1,425,679	2,640,829	537,170	4,905,522	854,229	10,412,318	84.8	1,861,486	1,058,604	647,898	602,224
Central New Jersey	Nov.	689	1,767,377	312,520	2,249,760	140,876	276,193	39,478	930,218	134,372	1,536,173	68.3	713,587	281,781	175,395	169,656
	11 mos.	689	20,713,802	4,134,683	26,595,905	1,566,436	4,581,382	480,805	10,644,920	1,157,465	18,595,743	69.9	8,000,162	3,920,563	2,873,984	2,215,982
Central Vermont	Nov.	455	327,376	20,145	386,833	40,656	66,349	11,389	178,390	16,446	313,275	81.0	73,558	57,463	47,258	22,892
	11 mos.	455	3,711,732	415,461	4,575,641	771,293	921,209	143,023	2,124,509	244,041	4,204,527	91.9	371,114	194,968	96,072	301,839
Chesapeake & Ohio	Nov.	3,142	8,518,221	200,461	9,102,821	865,810	1,580,382	177,555	2,059,881	269,673	4,965,438	54.5	4,137,383	3,277,995	3,155,219	3,371,060
	11 mos.	3,135	94,725,473	2,632,717	101,287,130	10,490,528	18,332,287	1,848,132	22,389,363	3,089,959	56,278,181	55.6	45,008,949	35,481,976	34,131,767	34,234,856
Chicago & Eastern Illinois	Nov.	938	826,117	72,236	1,034,896	136,185	165,703	51,237	411,092	80,718	851,916	82.3	182,980	132,906	—549	22,986
	11 mos.	938	9,164,182	1,095,666	11,652,118	1,471,223	1,804,360	550,411	4,642,069	697,199	9,225,227	79.2	2,426,891	1,762,290	380,729	119,444
Chicago & Illinois Midland	Nov.	131	236,999	1,195	244,129	27,523	47,504	15,491	63,028	20,118	173,664	71.1	70,465	59,676	70,253	92,288
	11 mos.	131	2,613,055	11,462	2,707,506	323,166	569,710	167,985	692,116	188,798	1,941,778	71.7	765,728	666,400	723,403	878,733
Chicago & North Western	Nov.	8,442	4,382,287	509,956	5,566,027	729,875	1,163,548	162,216	2,259,641	381,087	4,724,440	84.9	841,587	414,887	166,402	294,804
	11 mos.	8,442	54,774,910	7,887,003	70,408,039	10,165,066	14,521,704	1,805,437	27,119,899	3,462,006	57,391,469	81.5	13,016,570	7,298,788	4,784,766	5,848,345
Chicago, Burlington & Quincy	Nov.	9,036	5,369,978	484,892	6,588,386	697,265	991,298	171,047	2,369,320	406,732	4,643,455	70.5	1,944,931	1,558,285	1,174,004	1,477,669
	11 mos.	9,153	59,982,169	6,129,142	73,957,970	9,278,408	11,425,807	2,307,041	26,126,225	3,664,506	53,297,320	72.1	20,660,650	15,123,734	11,600,466	12,236,789
Chicago Great Western	Nov.	1,518	1,106,626	33,795	1,241,812	145,192	156,361	48,019	457,329	72,248	879,023	70.8	362,789	336,295	155,111	151,838
	11 mos.	1,518	12,745,232	468,946	14,294,887	1,853,313	2,079,920	558,881	5,367,327	621,641	10,472,069	73.3	3,822,818	3,274,288	1,170,839	1,013,097
Chicago, Indianapolis & Louisville	Nov.	644	467,947	41,011	578,008	45,533	142,688	25,444	257,822	44,033	521,537	90.2	56,471	53,704	—38,101	7,456
	11 mos.	644	5,465,376	524,875	6,808,635	629,815	1,577,824	275,615	2,841,181	324,531	5,710,954	83.9	1,097,681	670,700	—368,926	—58,894

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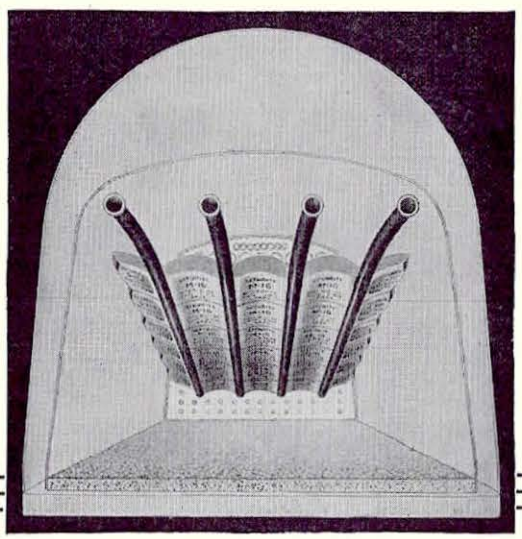
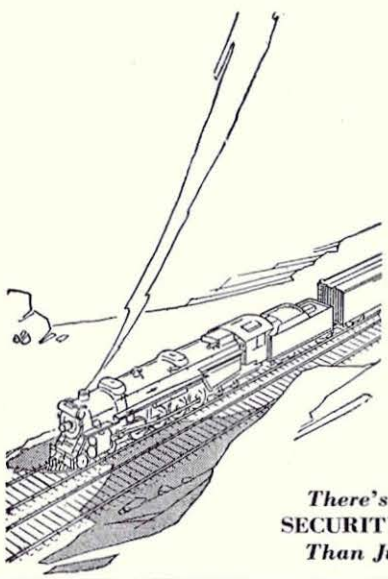
FOR TWENTY-FIVE CONTINUOUS YEARS!





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Revenues and Expenses of Railways

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1934—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of: Way and structures	Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1933
Chicago, Mil., St. Paul & Pacific	Nov.	11,176	$5,834,497	$384,379	$6,950,205	$946,322	$1,279,904	$194,116	$2,781,353	$398,799	$5,639,271	81.1	$1,310,934	$838,333	$398,482	$644,297
	11 mos.	11,173	68,052,559	5,036,660	81,150,869	12,006,781	15,645,020	2,255,463	30,478,316	3,419,491	64,110,044	79.0	17,040,825	11,067,654	6,232,339	8,317,415
Chicago, Rock Island & Pacific	Nov.	7,576	3,784,568	403,403	4,703,721	516,995	928,025	179,747	2,169,135	386,411	4,244,873	90.2	458,848	288,821	—4,706	—26,816
	11 mos.	7,598	47,716,955	5,111,043	58,618,633	6,269,009	13,432,916	1,983,336	23,847,736	3,464,039	49,679,623	84.8	8,939,010	4,933,743	1,828,096	3,203,097
Chicago, Rock Island & Gulf	Nov.	721	260,537	22,869	290,722	41,464	34,368	16,125	113,260	25,126	232,617	80.0	58,105	40,916	—6,245	30,143
	11 mos.	721	3,076,969	220,793	3,351,025	484,939	402,881	173,920	1,234,450	231,025	2,553,652	76.2	797,373	580,030	—22,533	—277,904
Chi., St. Paul, Minn. & Omaha	Nov.	1,654	942,963	97,211	1,127,777	182,000	197,332	29,960	591,058	89,661	1,098,091	97.4	29,686	—41,655	—107,433	68,443
	11 mos.	1,661	11,377,022	1,223,452	13,640,574	1,592,364	2,153,242	349,229	6,312,670	840,133	11,342,350	83.2	2,298,224	1,474,940	672,739	1,461,529
Clinchfield Railroad	Nov.	309	406,633	2,967	414,974	29,652	98,322	16,218	97,058	13,444	254,694	61.4	160,280	130,278	151,792	169,690
	11 mos.	309	4,700,577	36,303	4,793,473	421,358	1,110,622	172,066	919,669	147,884	2,771,599	57.8	2,021,874	1,586,788	1,887,676	1,719,960
Colorado & Southern	Nov.	1,019	462,473	24,014	534,181	59,256	102,238	11,578	191,579	39,536	404,930	75.8	129,251	84,685	72,688	186,694
	11 mos.	1,026	4,371,981	286,893	5,165,023	712,251	1,045,083	127,274	1,939,809	383,411	4,215,952	81.6	949,071	343,336	145,591	243,040
Ft. Worth & Denver City	Nov.	804	337,682	29,432	430,039	29,962	76,634	14,485	151,324	39,095	314,574	73.2	115,465	90,715	60,610	246,014
	11 mos.	804	4,201,904	380,715	5,237,036	390,573	749,660	178,072	1,628,529	379,284	3,349,615	64.0	1,887,421	1,570,900	1,216,370	1,395,499
Columbus & Greenville	Nov.	167	77,566	8,515	93,435	18,300	16,668	3,808	29,688	8,858	77,263	82.7	16,172	10,643	10,590	24,513
	11 mos.	167	672,422	65,977	801,420	168,649	129,218	40,354	334,601	96,900	769,653	96.0	31,767	—7,995	7,483	108,350
Delaware & Hudson	Nov.	848	1,675,168	74,302	1,834,834	277,579	531,650	46,893	696,451	180,455	1,735,651	94.6	99,183	31,525	54,945	210,068
	11 mos.	848	19,186,733	1,053,501	21,361,641	3,132,166	5,852,477	531,419	8,220,814	1,648,429	19,450,817	91.1	1,910,824	1,140,091	1,285,833	882,152
Delaware, Lackawanna & Western	Nov.	992	2,517,694	512,464	3,462,199	230,208	698,456	103,215	1,592,295	152,655	2,790,012	80.6	672,187	280,323	272,673	347,879
	11 mos.	992	30,041,148	5,972,731	41,028,205	3,522,901	7,996,533	1,179,690	17,982,196	1,690,713	32,594,407	79.4	8,433,798	4,521,989	4,261,415	3,195,629
Denver & Rio Grande Western	Nov.	2,636	1,535,799	65,969	1,689,812	253,028	372,161	50,044	591,664	107,786	1,377,606	81.5	312,206	137,077	64,988	518,065
	11 mos.	2,553	15,743,285	903,023	17,641,395	2,167,332	3,988,519	505,632	5,809,251	991,052	13,517,407	76.6	4,123,988	2,420,506	2,041,587	2,996,925
Denver & Salt Lake	Nov.	232	145,811	2,461	158,453	12,125	24,804	1,475	33,904	15,202	84,977	53.6	73,476	60,476	100,843	65,713
	11 mos.	232	1,289,057	37,537	1,438,442	142,756	238,248	17,067	298,450	135,073	822,685	57.2	615,757	467,719	703,027	648,267
Detroit & Mackinac	Nov.	242	52,005	2,671	59,357	6,366	6,968	939	20,715	4,402	39,399	66.4	19,958	17,547	17,558	9,986
	11 mos.	242	500,473	29,658	594,930	107,405	85,477	9,451	232,375	41,742	476,437	80.1	118,493	139,076	125,261	47,934
Detroit & Toledo Shore Line	Nov.	50	228,205	.....	230,008	15,595	21,926	6,759	59,550	8,623	112,441	48.9	117,567	94,323	52,999	26,792
	11 mos.	50	2,652,642	.....	2,670,017	208,504	243,660	75,042	675,988	81,633	1,284,692	48.1	1,385,325	1,148,985	663,442	465,645
Detroit, Toledo & Ironton	Nov.	472	338,787	198	349,180	38,776	54,657	9,802	102,388	23,078	225,667	64.6	123,513	89,675	73,232	48,550
	11 mos.	472	5,130,067	2,867	5,297,700	491,502	726,525	108,081	1,237,682	213,665	2,738,560	51.7	2,559,140	2,005,386	1,767,142	945,376
Duluth, Missabe & Northern	Nov.	560	79,764	2,822	106,931	100,253	170,315	2,357	127,676	47,731	448,263	419.2	—341,332	—370,303	—365,855	—308,989
	11 mos.	562	8,095,589	33,907	9,402,221	1,371,455	2,303,728	34,249	2,087,274	476,413	6,272,519	66.7	3,129,702	2,360,284	2,375,076	3,982,729
Duluth, Winnipeg & Pacific	Nov.	178	79,863	1,599	85,000	16,417	13,726	1,819	37,447	4,200	73,504	86.5	11,496	7,225	9,375	15,242
	11 mos.	178	764,398	26,958	823,261	217,355	192,811	20,814	385,310	57,969	873,898	106.2	—50,637	—93,684	—53,988	67,779
Elgin, Joliet & Eastern	Nov.	446	694,742	.....	758,891	81,207	184,192	12,881	313,768	57,686	649,723	85.6	109,168	27,651	21,906	71,077
	11 mos.	446	8,512,361	39	9,465,156	1,001,367	2,332,084	137,310	3,657,348	546,798	7,674,506	81.1	1,790,650	891,755	511,058	821,490
Erie Railroad	Nov.	2,304	4,742,884	373,402	5,572,447	390,810	1,225,984	148,214	2,166,417	282,104	4,213,277	75.6	1,359,170	1,025,102	641,200	1,135,670
	11 mos.	2,311	59,284,121	4,795,419	69,474,735	6,431,902	14,044,499	1,756,434	24,754,149	3,080,805	50,115,639	72.1	19,359,096	15,678,087	11,909,735	11,763,671
New Jersey & New York	Nov.	45	14,002	48,021	63,471	4,701	21,392	1,147	49,856	3,023	80,119	126.2	—16,648	—20,798	—36,725	—30,964
	11 mos.	45	170,825	570,125	761,741	78,601	263,371	13,603	540,156	37,833	933,564	122.6	—171,823	—217,512	—394,863	—309,509
N. Y., Susquehanna & Western	Nov.	215	205,686	22,442	243,771	49,544	53,605	4,284	109,696	11,917	229,045	94.0	14,726	—5,815	—38,904	39,998
	11 mos.	215	2,851,606	282,581	3,304,920	397,099	634,906	47,982	1,312,552	132,177	2,524,706	76.4	780,214	522,163	301,006	248,501
Florida East Coast	Nov.	812	373,038	124,794	623,285	118,948	139,123	23,171	185,444	49,827	521,292	83.6	101,993	66,809	37,856	—82,198
	11 mos.	822	4,428,165	1,592,477	6,932,777	1,230,999	1,438,125	222,770	2,166,853	455,698	5,585,150	80.6	1,347,627	596,212	159,933	—218,693
Fort Smith & Western	Nov.	249	50,416	1,010	54,711	13,710	11,053	5,969	19,331	4,188	54,421	99.5	290	—1,710	—6,605	4,001
	11 mos.	249	570,135	11,354	621,123	156,710	109,261	60,395	207,090	44,364	572,690	92.2	48,433	29,179	—28,104	—7,490
Georgia R. R.	Nov.	329	228,832	11,750	264,908	20,238	46,021	16,308	109,333	11,334	203,639	76.9	61,269	55,258	69,736	44,422
	11 mos.	329	2,519,693	152,299	2,924,419	288,854	593,203	179,469	1,225,302	140,684	2,432,074	83.2	492,345	433,451	508,310	513,707
Georgia & Florida	Nov.	408	71,019	2,400	78,427	15,514	15,319	7,452	31,219	7,277	76,781	97.9	1,646	—4,814	—4,735	—8,129
	11 mos.	457	876,034	26,904	957,206	220,859	189,762	82,341	371,770	67,873	933,012	97.5	24,194	—36,743	—50,420	—11,808
Grand Trunk Western	Nov.	1,006	932,466	64,936	1,102,957	180,157	304,570	31,570	550,341	93,131	1,161,444	105.3	—58,487	—127,523	—184,172	—148,947
	11 mos.	1,007	13,916,043	740,852	15,847,828	2,318,142	3,327,466	361,465	6,683,220	1,000,976	13,714,559	86.5	2,133,269	1,314,131	314,464	—839,517
Canadian Nat'l Lines in New Eng.	Nov.	172	54,704	4,625	67,362	17,609	17,585	2,612	50,050	8,665	96,925	143.9	—29,563	—42,357	—78,215	—78,488
	11 mos.	172	804,750	72,367	967,347	269,462	215,170	30,189	578,623	106,013	1,204,199	124.5	—236,852	—363,218	—762,293	—725,058
Great Northern	Nov.	8,328	5,107,809	272,380	5,828,318	482,117	956,507	146,930	1,997,122	291,021	3,925,915	67.4	1,902,403	1,399,710	1,233,678	832,180
	11 mos.	8,345	56,288,248	3,793,214	65,660,466	7,951,165	11,039,511	1,780,739	21,046,029	2,580,572	45,027,343	68.6	20,633,123	14,610,538	12,897,342	10,980,190
Green Bay & Western	Nov.	233	99,611	829	104,634	24,034	13,031	4,972	45,042	5,780	92,838	88.7	11,796	7,748	7,233	240
	11 mos.	233	962,776	10,535	1,022,465	228,376	189,553	51,796	440,177	41,041	950,673	92.9	71,792	15,572	—510	65,981
Gulf & Ship Island	Nov.	259	65,158	7,215	83,704	13,844	13,728	2,626	48,399	4,133	82,730	98.8	974	—14,728	—23,772	—16,404
	11 mos.	260	833,389	81,438	1,052,135	162,877	168,084	27,799	516,282	50,606	927,007	88.1	125,128	—47,265	—153,202	—156,076

Continued on next left-hand page

PARROTS - *led Columbus astray*

The ancient seaman's belief that birds are good-luck guides, led Columbus to follow a flock of parrots. And so he missed the mainland . . . . yes, he discovered only *the fringe* of America.

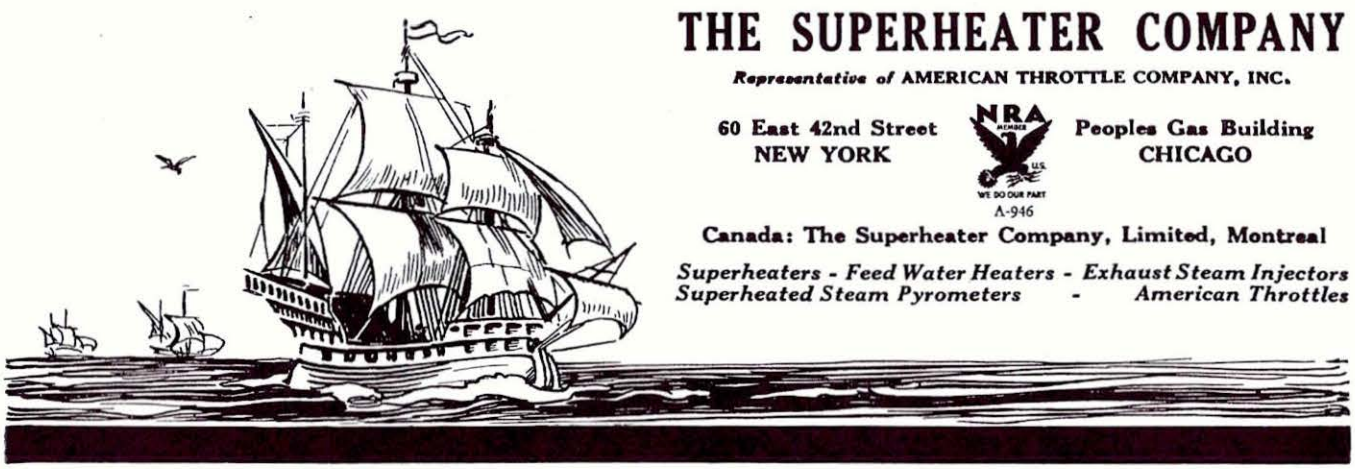
In nearly every line of endeavor there are parrot-like beckonings to forsake tried and true procedure in achieving objectives, leading, if followed, to fringe results.

When Elesco superheater units become unserviceable after many years of severe duty, the logical procedure is to have them rehabilitated by Elesco . . . . if full (rather than fringe) results are desired.

Elesco originally manufactured your superheater units. Elesco restores them — by REmanufacturing them — at a saving to you, compared to the purchase of new units, yet with the assurance of full-efficiency performance.

Elesco REmanufactured superheater units are practically equivalent in every way to new units.

ELESCO



THE SUPERHEATER COMPANY

Representative of AMERICAN THROTTLE COMPANY, INC.

60 East 42nd Street
NEW YORK

NRA MEMBER U.S. WE DO OUR PART
A-946

Peoples Gas Building
CHICAGO

Canada: The Superheater Company, Limited, Montreal

Superheaters - Feed Water Heaters - Exhaust Steam Injectors
Superheated Steam Pyrometers - American Throttles

Revenues and Expenses of Railways

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1934—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of: Way and structures	Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1933
Gulf, Mobile & Northern	Nov.	961	$404,600	$22,131	$446,308	$61,050	$61,005	$31,559	$133,074	$30,494	$317,382	71.11	$128,926	$97,926	$50,724	$30,400
	11 mos.	961	4,376,084	209,063	4,800,940	626,785	711,170	366,910	1,479,984	289,826	3,466,846	72.21	1,334,094	992,778	455,750	708,267
Illinois Central	Nov.	4,973	5,230,253	576,565	6,322,674	515,609	1,454,442	190,893	2,451,098	319,362	4,960,950	78.5	1,361,724	916,010	774,074	1,121,299
	11 mos.	5,000	58,485,927	7,708,388	72,345,407	6,218,439	14,993,018	1,988,469	27,081,486	3,546,610	54,176,284	74.9	18,169,123	13,326,276	11,077,914	13,408,507
Yazoo & Mississippi Valley	Nov.	1,636	1,020,412	76,886	1,172,317	79,660	172,928	27,795	435,107	50,541	765,804	65.3	406,513	266,444	167,696	198,177
	11 mos.	1,640	9,448,385	708,109	10,944,092	918,996	1,738,618	287,542	4,492,400	566,838	8,008,247	73.2	2,935,845	1,696,185	590,342	1,138,079
Illinois Central System	Nov.	6,609	6,250,665	653,451	7,494,991	595,269	1,627,370	218,688	2,886,205	369,903	5,726,754	76.4	1,768,237	1,180,543	952,038	1,329,188
	11 mos.	6,641	67,934,312	8,416,497	83,289,499	7,137,435	16,731,636	2,276,011	31,573,886	4,113,448	62,184,531	74.7	21,104,968	15,001,168	11,779,900	14,652,518
Illinois Terminal	Nov.	525	312,966	57,110	408,910	41,979	59,226	14,429	140,809	21,582	279,286	68.30	129,624	109,617	94,941	62,221
	11 mos.	525	3,515,126	620,051	4,489,280	533,109	655,963	159,945	1,586,657	202,030	3,146,030	70.08	1,343,250	1,064,495	878,302	796,508
Kansas City Southern	Nov.	882	647,080	17,057	761,614	73,325	138,327	48,652	244,173	84,651	590,238	77.50	171,376	111,393	77,366	85,763
	11 mos.	882	7,677,065	193,036	8,929,152	830,611	1,486,857	524,313	2,849,291	814,102	6,515,851	72.97	2,413,301	1,733,558	1,277,937	1,115,153
Kansas, Oklahoma & Gulf	Nov.	326	141,111	409	144,319	27,927	19,999	7,029	35,888	10,968	100,092	69.4	44,227	32,755	17,127	1,573
	11 mos.	326	1,692,801	4,193	1,728,609	218,376	164,088	79,378	403,665	99,895	935,422	54.1	793,187	640,328	457,333	419,821
Lake Superior & Ishpeming	Nov.	160	38,627	202	42,391	18,363	16,859	634	20,077	7,715	63,648	150.1	—21,257	—34,400	—35,797	29,186
	11 mos.	160	1,207,753	1,602	1,393,461	275,022	216,046	7,067	289,709	71,792	859,557	61.7	533,904	334,230	314,587	788,348
Lehigh & Hudson River	Nov.	96	114,227	148	115,634	12,024	17,147	3,331	39,049	7,632	79,183	68.5	36,451	25,489	12,701	13,152
	11 mos.	96	1,294,826	2,005	1,328,542	163,913	221,870	35,039	446,906	78,308	946,036	71.2	382,506	266,406	131,836	175,865
Lehigh & New England	Nov.	220	245,166	302	247,365	35,025	65,258	5,967	103,883	19,212	229,345	92.7	18,020	13,426	20,211	55,731
	11 mos.	227	3,162,966	4,859	3,193,376	399,439	705,839	57,311	1,097,967	181,525	2,441,961	76.5	751,415	631,371	678,274	626,403
Lehigh Valley	Nov.	1,353	2,684,847	185,915	3,101,493	195,475	616,093	105,401	1,426,684	128,971	2,486,811	80.2	614,682	511,197	401,607	283,921
	11 mos.	1,353	31,634,481	2,226,580	36,550,712	2,815,744	6,671,418	1,204,945	16,141,928	1,473,655	28,494,238	78.0	8,056,474	6,096,202	4,596,726	3,816,507
Louisiana & Arkansas	Nov.	608	331,045	11,143	368,393	49,722	58,150	25,259	96,341	22,409	251,597	68.3	116,796	85,632	73,434	64,278
	11 mos.	608	3,693,550	97,559	4,084,418	516,473	674,891	267,490	999,631	222,372	2,682,236	65.7	1,402,182	1,045,320	934,128	851,070
Louisiana, Arkansas & Texas	Nov.	255	67,491	859	72,848	16,957	9,040	4,868	26,646	5,548	63,059	86.6	9,789	7,245	—5,826	8,649
	11 mos.	255	829,270	4,323	889,334	195,887	102,775	50,047	299,386	54,018	694,564	78.1	194,770	165,425	7,930	—4,555
Louisville & Nashville	Nov.	5,051	5,113,627	411,966	5,986,255	694,460	1,301,705	151,148	2,026,093	264,975	4,473,643	74.7	1,512,612	1,258,333	1,290,005	821,129
	11 mos.	5,063	54,458,958	4,778,481	64,235,204	7,706,440	13,488,876	1,785,996	22,542,549	3,108,308	48,993,187	76.3	15,242,017	11,600,993	11,762,955	10,764,976
Maine Central	Nov.	1,046	767,787	56,738	915,479	94,245	114,249	9,321	313,609	33,782	572,078	62.5	343,401	295,065	225,932	147,907
	11 mos.	1,048	8,192,004	847,726	10,010,198	1,566,759	1,603,148	113,174	3,689,070	401,318	7,380,158	73.7	2,630,040	2,101,353	1,622,153	1,834,395
Midland Valley	Nov.	363	115,232	38	118,380	15,656	10,024	2,179	30,217	7,692	65,768	55.6	52,612	44,941	34,232	16,150
	11 mos.	363	1,161,356	3,867	1,207,835	177,474	116,042	24,673	314,400	73,419	701,656	58.1	506,179	433,150	348,741	386,515
Minneapolis & St. Louis	Nov.	1,650	544,085	15,345	598,137	93,953	110,785	22,720	283,948	33,603	543,918	90.9	54,219	36,211	3,635	—22,290
	11 mos.	1,631	6,384,143	159,991	6,976,843	1,032,090	1,409,855	242,428	3,255,033	369,735	6,298,657	90.3	678,186	347,008	63,098	226,756
Minn., St. Paul & S. S. Marie	Nov.	4,297	1,545,908	55,547	1,754,783	224,637	283,518	54,349	756,428	137,098	1,459,659	83.2	295,124	372,834	242,502	—158,126
	11 mos.	4,303	18,027,989	1,003,154	20,758,291	2,726,728	3,719,776	630,406	8,337,994	1,288,257	16,764,925	80.8	3,993,366	2,745,304	1,325,040	793,560
Duluth, South Shore & Atlantic	Nov.	555	121,599	8,762	143,311	23,568	31,506	4,711	68,786	9,509	138,020	96.3	5,291	—2,537	—5,328	—13,112
	11 mos.	557	1,747,267	105,070	2,053,401	313,847	397,359	49,593	816,265	77,494	1,650,679	80.4	402,722	289,004	188,048	19,876
Spokane International	Nov.	163	29,250	1,283	35,103	10,525	5,463	2,071	18,493	5,023	41,575	118.4	—6,472	—7,673	—10,524	—97
	11 mos.	163	399,586	16,954	470,853	121,397	61,522	19,384	207,380	48,988	458,604	97.4	12,249	—21,842	—48,678	—95,929
Mississippi Central	Nov.	150	45,056	1,914	49,352	7,279	11,046	7,291	17,732	6,351	49,699	100.7	—347	—3,157	—5,751	—2,092
	11 mos.	150	547,649	19,432	589,120	97,650	116,606	76,501	183,376	62,723	536,840	91.1	52,280	20,811	—8,606	—18,123
Missouri & North Arkansas	Nov.	364	62,617	1,263	69,573	13,974	7,263	3,387	23,266	5,102	52,992	76.2	16,581	14,943	7,668	9,241
	11 mos.	364	774,011	14,426	863,632	196,670	109,256	36,446	294,627	46,648	683,397	79.1	180,235	162,707	63,525	50,793
Missouri-Illinois	Nov.	213	77,852	590	80,202	15,451	11,254	2,582	29,145	6,970	65,396	81.5	14,806	9,101	3,416	5,646
	11 mos.	213	858,917	6,460	885,566	193,601	115,206	28,258	291,589	66,253	694,810	78.5	190,756	130,654	51,106	23,879
Missouri-Kansas-Texas Lines	Nov.	3,293	1,629,278	147,872	2,014,220	255,406	396,071	102,266	784,532	145,952	1,699,428	84.4	314,792	238,906	56,340	535,401
	11 mos.	3,293	20,031,253	1,715,467	24,351,455	2,946,548	4,346,465	1,209,077	8,604,591	1,537,213	18,821,270	77.3	5,530,185	3,767,977	1,745,335	2,416,568
Missouri Pacific	Nov.	7,357	4,710,607	328,543	5,575,472	832,326	1,209,580	210,955	2,203,909	366,827	4,840,170	86.8	735,302	539,333	163,116	387,445
	11 mos.	7,359	58,204,911	3,577,337	67,915,019	9,373,947	14,255,026	2,360,450	24,064,074	3,258,888	53,522,955	78.8	14,392,064	10,882,849	6,078,653	6,770,520
Gulf Coast Lines	Nov.	1,763	643,638	32,814	732,664	123,222	151,946	40,467	245,121	61,313	622,353	84.94	110,311	72,328	6,150	31,990
	11 mos.	1,764	7,987,397	365,041	9,006,511	1,369,498	1,621,879	458,304	2,741,859	560,665	6,741,596	74.85	2,264,915	1,748,783	836,443	179,374
International-Great Northern	Nov.	1,154	791,192	55,282	961,866	126,702	183,119	25,844	376,265	61,610	779,553	81.05	182,313	154,393	56,140	38,796
	11 mos.	1,158	9,924,562	585,057	11,666,403	1,468,580	1,900,366	301,944	4,249,963	546,585	8,567,521	73.44	3,098,882	2,716,058	1,400,742	1,477,471
San Antonio, Uvalde & Gulf	Nov.	316	61,169	2,837	70,496	15,099	8,362	3,842	23,276	5,574	56,151	79.7	14,345	11,019	—7,881	—9,621
	11 mos.	316	867,233	30,820	976,058	185,762	100,988	44,821	286,969	52,053	669,248	68.6	306,810	265,883	41,213	—123,571
Mobile & Ohio	Nov.	1,201	626,124	24,778	689,165	106,925	150,006	39,028	279,190	50,939	626,077	90.8	63,088	41,041	—29,479	5,411
	11 mos.	1,201	7,169,314	284,211	7,895,354	1,097,807	1,863,227	438,121	2,919,233	451,358	6,769,417	85.7	1,125,937	770,837	32,695	160,704
Monongahela	Nov.	177	314,570	625	316,406	31,355	29,369	361	65,742	6,425	133,252	42.7	183,154	166,657	83,426	85,967
	11 mos.	177	3,512,047	8,783	3,544,303	358,791	316,870	4,076	708,667	50,495	1,437,684	40.6	2,106,619	1,878,075	1,010,321	1,061,236

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AMERICAN LOCOMOTIVE CO.

FOOD FOR THOUGHT— 2

"IT MAY well be asked how many locomotives 15 or even 10 years old are really capable of performing economically the intensive work demanded by the modern schedule. It is not perhaps an exaggeration to say that 50 per cent. of the world's locomotives are more or less unsuited to modern conditions, many comparing more favourably with the Rocket than with modern motive power units! Conversely, probably less than 20 per cent. can really be classed as modern locomotives designed for to-day's requirements.

Competition and present world conditions demand powerful and efficient machines capable not only of exerting tractive effort but of furnishing the requisite boiler horse power to maintain that tractive effort continuously. This is the main characteristic of the modern locomotive. The coupled wheels must also be of larger diameter for the faster freight and passenger work required and this reminds us of the many smaller wheeled engines of earlier days still being repaired which in their attempt to keep up with the times turn 20 per cent. more revolutions than necessary—a further adverse effect on service and the road bed, and an increase in maintenance by an amount far more than that indicated by direct proportion.

Another interesting point is the continual "patching" which goes on of old and worn out locomotives that have long since had their day. A certain amount of improvement to 15 or 20-year-old engines is we think legitimate, but is not this "patching" carried on too far on machines which really should be scrapped?

The locomotive of to-day works in a world of different economics from its ancestry. Cleverly planned schemes of allocation and distribution of engine power insist on a more intensive use of the locomotive—it must be capable of greatly increased mileage per month and practically continuous work between shoppings with the utmost economy. Thus we find the characteristics of much of our motive power of 20 to 30 years ago really unsuitable and some would say wholly obsolescent for such service. Scrapping of old engines should be accelerated and the possibility of the immediate acquisition of new power be re-examined, repair cost and suitability rather than age being the deciding factor."

Continued next week]

THE RAILWAY GAZETTE (*London*)
Nov. 28, 1934

30 CHURCH ST. NEW YORK, N.Y.

Revenues and Expenses of Railways

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1934—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of: Way and structures	Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1933
Montour	Nov.	57	$148,764	$7	$149,355	$9,614	$34,643	$867	$33,617	$6,347	$85,088	57.0	$64,267	$48,640	$71,778	$74,966
	11 mos.	57	1,735,687	11	1,741,488	142,329	469,787	10,859	363,395	69,032	1,055,402	60.6	686,086	528,537	722,008	694,252
Nashville, Chattanooga & St. Louis	Nov.	1,203	837,131	64,522	1,013,747	124,699	248,526	53,713	432,481	57,987	923,043	91.1	90,704	55,452	42,840	12,057
	11 mos.	1,203	9,754,006	802,039	11,767,763	1,565,788	2,711,282	601,575	4,603,391	618,011	10,156,110	86.3	1,611,653	1,201,746	932,905	926,791
Nevada Northern	Nov.	165	25,205	921	30,572	10,129	4,382	697	7,876	4,326	27,410	89.7	3,162	—4,572	—670	—8,313
	11 mos.	165	275,497	10,025	330,282	95,431	36,421	7,793	78,837	39,533	258,015	78.1	72,267	—4,125	37,084	—38,187
New York Central	Nov.	11,401	15,857,268	3,902,339	22,650,097	2,476,169	5,021,692	519,391	8,950,696	979,001	18,270,615	80.7	4,379,482	2,973,181	1,706,079	1,813,159
	11 mos.	11,401	187,935,159	49,452,845	270,452,592	28,036,047	55,732,109	5,757,879	100,449,183	11,113,763	204,727,794	75.7	65,724,798	42,626,186	27,584,970	31,035,767
Pittsburgh & Lake Erie	Nov.	233	1,074,011	44,075	1,154,792	91,989	426,265	24,443	436,427	63,839	1,050,712	91.0	104,080	52,901	200,438	184,681
	11 mos.	233	13,200,048	509,202	14,161,817	1,268,883	4,760,153	269,810	4,798,711	708,087	11,877,760	83.9	2,284,057	1,396,536	2,986,270	2,743,108
New York, Chicago & St. Louis	Nov.	1,691	2,381,938	54,108	2,515,926	263,419	408,330	100,626	943,988	125,642	1,838,323	73.1	677,603	515,607	270,974	371,485
	11 mos.	1,691	28,638,491	838,581	30,533,088	3,263,845	4,501,723	1,102,599	10,623,130	1,341,149	20,798,916	68.1	9,734,172	8,069,545	5,064,960	4,807,175
N. Y., New Haven & Hartford	Nov.	2,072	3,157,586	1,771,915	5,589,442	654,002	926,405	71,632	2,119,870	335,197	4,237,559	75.8	1,351,883	951,003	404,474	657,184
	11 mos.	2,070	36,363,264	19,632,697	63,509,240	7,393,282	11,244,816	807,311	24,618,009	2,938,145	48,406,525	76.2	15,102,715	10,978,085	5,115,599	7,080,003
New York Connecting	Nov.	20	226,926	.....	238,280	17,486	6,778	.....	23,182	1,136	48,582	20.4	189,698	156,398	119,860	103,195
	11 mos.	20	2,340,831	.....	2,470,820	138,757	80,178	.....	305,934	11,438	536,307	21.7	1,934,513	1,567,383	1,129,189	1,220,173
New York, Ontario & Western	Nov.	568	568,655	5,558	626,832	80,953	124,849	11,124	277,940	22,389	517,424	82.5	109,408	74,402	16,811	109,047
	11 mos.	568	7,517,046	391,275	8,680,596	1,036,793	1,566,557	126,590	3,553,739	300,442	6,614,862	76.2	2,065,734	1,597,057	1,038,498	1,556,801
Norfolk & Western	Nov.	2,184	5,569,444	123,846	5,891,414	634,966	1,230,128	116,955	1,349,012	281,363	3,623,343	61.5	2,268,071	1,797,228	2,035,631	1,837,968
	11 mos.	2,185	63,154,320	1,605,099	66,865,126	7,006,268	14,959,142	1,245,316	15,159,145	2,496,331	41,001,998	61.3	25,863,128	18,558,237	20,494,968	22,381,614
Norfolk Southern	Nov.	932	323,898	8,316	352,567	67,473	48,651	20,755	140,341	26,546	303,766	86.2	48,801	22,771	409	52,261
	11 mos.	932	4,130,184	111,874	4,440,987	749,727	545,266	214,350	1,563,915	273,901	3,347,159	75.4	1,093,828	794,342	480,005	229,165
Northern Pacific	Nov.	6,727	3,700,865	205,529	4,285,032	399,844	946,966	131,949	1,643,685	340,842	3,519,431	82.1	765,601	365,226	647,740	638,783
	11 mos.	6,730	40,155,029	3,025,327	47,600,789	5,169,374	10,052,175	1,604,325	17,786,840	3,191,493	38,460,392	80.8	9,140,397	3,849,793	6,970,598	4,977,150
Northwestern Pacific	Nov.	379	120,679	66,456	217,069	40,684	46,983	3,940	135,591	7,025	233,991	107.8	—16,922	—32,194	—41,232	—19,167
	11 mos.	385	1,777,798	878,025	3,011,905	433,609	518,843	46,413	1,538,069	164,674	2,699,540	89.6	312,365	134,525	12,764	—200,844
Oklahoma City-Ada-Atoka	Nov.	132	24,961	392	27,362	3,952	4,946	704	10,404	2,006	21,938	80.2	5,424	2,628	—4,330	—3,877
	11 mos.	132	287,795	3,816	311,274	54,153	21,550	7,323	112,330	18,865	213,530	68.6	97,744	66,044	—9,548	—15,702
Pennsylvania Railroad	Nov.	10,511	19,675,170	4,128,051	26,536,891	2,101,947	4,817,276	576,825	9,780,708	1,901,659	19,493,978	73.5	7,042,913	5,155,548	4,414,831	5,064,800
	11 mos.	10,511	232,410,771	52,674,381	316,757,639	28,211,625	60,838,779	6,238,976	112,542,091	17,158,840	228,576,640	72.2	88,180,999	64,778,744	55,683,035	58,296,234
Long Island	Nov.	400	484,078	1,220,494	1,796,506	137,951	299,998	11,053	838,443	81,804	1,369,266	76.2	427,240	266,068	88,626	394,605
	11 mos.	400	5,276,425	15,915,267	22,274,805	1,883,125	3,437,125	160,597	9,756,090	726,821	15,966,561	71.7	6,308,244	3,840,024	1,915,616	3,736,809
Pennsylvania-Reading Seashore Lines	Nov.	411	231,233	115,793	366,733	36,975	62,382	8,893	254,589	34,578	397,444	108.4	—30,711	—90,145	—159,448	—228,040
	11 mos.	411	2,548,723	2,528,976	5,362,197	465,862	822,448	103,376	3,385,745	326,532	5,098,828	95.1	263,369	—652,800	—1,772,355	—1,223,108
Pere Marquette	Nov.	2,222	1,726,685	41,231	1,873,153	262,174	432,513	56,567	731,190	86,590	1,573,143	84.0	300,010	197,185	52,117	105,337
	11 mos.	2,234	20,692,749	679,772	22,650,033	2,693,925	4,917,746	641,285	8,568,155	971,837	17,833,707	78.7	4,816,326	3,723,855	2,489,785	1,485,127
Pittsburg & Shawmut	Nov.	101	54,927	434	56,887	10,398	18,000	1,292	16,790	5,126	51,606	90.7	5,281	4,309	6,543	15,274
	11 mos.	102	578,809	4,795	592,191	105,950	191,266	14,739	183,279	39,085	534,319	90.2	57,872	49,806	100,403	113,854
Pittsburgh & West Virginia	Nov.	138	193,261	.....	204,086	25,586	52,396	13,950	47,926	17,344	168,026	82.3	36,060	22,064	53,684	58,491
	11 mos.	138	2,402,254	.....	2,515,772	245,510	664,300	154,429	527,583	163,046	1,845,022	73.3	670,750	439,530	782,995	856,409
Pittsburgh, Shawmut & Northern	Nov.	195	89,564	177	91,168	13,226	21,312	1,197	32,250	7,994	75,979	83.3	15,189	12,893	5,438	9,903
	11 mos.	195	811,775	1,860	840,812	201,251	212,317	14,199	313,724	75,732	817,223	97.2	23,589	—1,042	—62,135	98,290
Reading	Nov.	1,461	3,705,167	233,564	4,172,671	307,199	675,631	74,397	1,621,771	282,454	2,977,514	71.4	1,195,157	923,299	970,543	1,075,705
	11 mos.	1,461	43,618,377	2,685,855	48,707,454	3,603,809	8,736,343	787,481	18,078,265	2,382,121	33,775,218	69.3	14,932,236	11,544,693	11,773,322	12,480,132
Richmond, Fredericksburg & Potomac	Nov.	117	244,944	103,984	453,708	59,649	102,331	8,569	190,818	40,486	409,759	90.3	43,949	23,682	—2,074	20,902
	11 mos.	117	2,968,273	1,381,357	5,551,482	582,165	1,241,721	91,009	2,229,423	364,527	4,607,316	83.0	944,166	668,913	311,791	404,078
Rutland	Nov.	413	158,703	25,416	240,276	41,983	52,958	9,897	127,686	15,385	247,909	103.2	—7,633	—27,902	—21,160	6,190
	11 mos.	413	2,001,557	360,571	2,999,184	528,469	613,519	115,011	1,430,905	151,343	2,838,634	94.6	160,550	—60,430	—22,509	266,362
St. Louis-San Francisco	Nov.	5,092	2,543,569	188,326	3,033,310	596,581	798,775	94,773	1,173,853	215,890	2,883,985	95.1	149,325	—56,046	—81,129	82,036
	11 mos.	5,149	31,620,647	2,220,420	37,107,822	6,219,697	8,669,581	1,044,701	13,152,473	1,881,380	30,978,620	83.5	6,129,202	3,298,444	2,984,104	3,254,669
Ft. Worth & Rio Grande	Nov.	233	37,464	1,244	46,168	13,667	10,495	2,752	23,542	5,713	56,169	121.7	—10,001	—16,177	—21,521	—25,824
	11 mos.	233	342,859	13,206	431,312	139,547	113,442	26,102	242,445	47,044	568,513	131.8	—137,201	—180,936	—242,708	—367,824
St. Louis, San Francisco & Texas	Nov.	261	59,166	651	63,315	26,680	16,913	4,233	36,578	9,367	93,749	148.1	—30,434	—32,566	—59,535	—13,995
	11 mos.	261	834,053	6,457	876,428	328,197	174,504	49,545	385,989	91,157	1,028,110	117.3	—151,682	—194,717	—473,018	—314,555
St. Louis Southwestern Lines	Nov.	1,810	1,012,431	18,071	1,088,181	116,569	162,541	69,961	397,732	32,562	785,849	72.2	302,332	231,847	138,453	166,889
	11 mos.	1,831	12,353,720	191,814	13,163,733	1,370,820	1,862,316	746,840	4,317,535	716,524	9,080,625	69.0	4,083,108	3,300,849	1,949,124	1,666,641
San Diego & Arizona Eastern	Nov.	155	20,905	3,093	26,319	9,937	9,292	2,026	18,909	2,838	43,579	165.6	—17,260	—19,989	—18,169	—13,747
	11 mos.	155	349,703	47,308	411,241	108,308	96,812	18,096	178,892	47,599	455,923	110.9	—44,682	—67,356	—51,932	—52,070
Seaboard Air Line	Nov.	4,308	2,224,462	272,615	2,758,295	492,177	575,867	132,880	1,006,623	188,216	2,422,716	87.8	335,579	198,658	113,221	281,322
	11 mos.	4,309	24,654,888	3,018,217	30,897,832	5,232,443	6,489,438	1,446,686	11,172,302	1,657,679	26,334,275	85.2	4,563,557	2,450,648	1,387,805	2,284,162

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THEY OBEY!

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1881 **Union Switch & Signal Co.** 1935

SWISSVALE, PA.

NEW YORK MONTREAL CHICAGO ST. LOUIS SAN FRANCISCO

Revenues and Expenses of Railways

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1934—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1933
Southern Ry.	Nov.	6,644	$5,273,884	$595,171	$6,509,165	$851,410	$1,230,455	$140,300	$2,409,764	$374,010	$5,044,631	77.5	$1,464,534	$1,032,953	$848,133	$934,281
	11 mos.	6,644	57,955,771	7,149,164	71,749,625	9,406,902	13,401,122	1,537,184	26,204,440	3,183,112	54,160,830	75.5	17,588,795	12,637,851	10,634,756	13,607,650
Alabama Great Southern	Nov.	315	331,989	38,498	407,375	80,368	101,608	11,206	134,363	21,138	351,296	86.2	56,079	28,644	25,766	37,210
	11 mos.	315	3,663,499	468,194	4,507,254	818,107	1,009,996	117,730	1,479,087	184,179	3,635,811	80.7	871,443	599,881	566,029	528,920
Cinn., New Orleans & Texas Pacific	Nov.	336	792,242	63,408	920,087	163,931	199,385	25,408	259,392	54,948	707,556	76.9	212,531	186,780	162,388	147,857
	11 mos.	336	9,944,001	721,047	11,334,859	1,492,019	2,073,828	265,318	2,940,927	456,742	7,277,249	64.2	4,057,610	3,345,113	2,916,834	3,143,731
Georgia Southern & Florida	Nov.	397	98,324	22,114	137,506	32,102	35,163	1,581	63,220	5,484	139,446	101.4	—1,940	—11,315	—3,064	—10,848
	11 mos.	397	1,211,689	288,995	1,699,748	323,277	404,305	18,061	763,336	40,642	1,573,470	92.6	126,278	—13,581	52,695	—12,308
New Orleans & Northeastern	Nov.	204	158,562	17,204	191,555	26,951	27,466	6,406	66,034	11,431	139,754	73.0	51,801	24,856	9,551	—1,336
	11 mos.	204	1,669,977	198,656	2,027,305	287,859	371,063	60,958	707,774	106,157	1,549,469	76.4	477,836	213,244	51,710	—202,872
Northern Alabama	Nov.	99	45,881	1,689	49,206	14,058	1,992	1,153	16,614	2,332	36,148	73.5	13,058	9,359	—2,665	2,760
	11 mos.	99	460,647	18,422	497,745	113,850	16,925	12,695	168,523	21,099	332,239	66.8	165,506	129,375	17,141	—10,942
Southern Pacific	Nov.	8,795	6,598,512	1,259,681	8,750,166	816,111	1,376,091	295,450	3,418,899	258,311	6,340,524	72.5	2,409,642	1,682,120	1,415,251	1,434,691
	11 mos.	8,835	79,637,671	14,400,610	104,142,625	10,104,657	17,517,397	3,014,324	36,557,985	6,144,955	75,255,710	72.3	28,886,915	20,019,556	16,211,863	8,610,449
So. Pac. Steamship Lines	Nov.	....	314,087	7,678	338,018	14,174	92,896	17,318	279,462	6,342	410,192	121.4	—72,174	—72,743	—72,836	—56,086
	11 mos.	....	3,789,281	170,182	4,095,698	169,421	1,187,156	178,706	3,070,537	224,444	4,830,264	117.9	—734,566	—741,478	—736,079	—384,814
Texas & New Orleans	Nov.	4,453	2,218,407	205,049	2,767,691	349,365	556,820	116,898	967,375	107,267	2,113,503	76.4	654,188	449,342	296,119	39,693
	11 mos.	4,464	23,364,479	2,276,501	29,208,223	4,480,617	6,481,835	1,221,138	10,109,131	2,287,919	24,710,303	84.6	4,497,920	1,938,644	—170,418	—241,332
Spokane, Portland & Seattle	Nov.	552	309,909	31,232	381,650	34,217	58,003	5,563	138,103	20,876	258,977	67.9	122,673	68,348	45,607	125,081
	11 mos.	552	4,472,697	430,795	5,298,563	461,799	673,553	64,873	1,620,397	184,884	3,027,866	57.1	2,270,697	1,647,899	1,343,312	806,378
Tennessee Central	Nov.	287	163,515	4,044	178,494	32,081	26,823	4,938	59,467	13,073	136,235	76.3	42,259	37,616	25,117	11,513
	11 mos.	287	1,765,543	57,431	1,933,965	313,232	281,586	56,658	647,626	125,644	1,423,099	73.6	510,866	463,804	312,895	249,170
Texas & Pacific	Nov.	1,949	1,531,349	150,696	1,900,880	216,979	344,121	61,669	575,285	139,405	1,353,189	71.2	547,691	476,713	379,225	417,677
	11 mos.	1,950	16,415,199	1,721,128	20,501,179	2,117,524	3,484,411	700,691	6,004,843	1,311,363	13,793,586	67.3	6,707,593	5,549,348	4,342,573	3,357,013
Texas Mexican	Nov.	162	88,062	954	97,193	12,121	11,873	3,012	30,217	6,706	63,929	65.8	33,264	29,009	23,148	—16,458
	11 mos.	162	795,776	4,364	881,069	118,461	130,917	32,880	305,236	77,306	663,413	75.3	217,656	170,157	121,764	—113,580
Toledo, Peoria & Western	Nov.	239	120,671	8	122,998	32,863	11,550	15,105	37,828	12,560	109,906	89.4	13,092	7,692	—5,538	25,743
	11 mos.	239	1,571,718	154	1,595,826	405,094	135,405	162,879	448,632	98,073	1,250,083	78.3	345,743	287,972	124,850	219,757
Union Pacific	Nov.	3,767	4,679,379	348,224	5,511,614	373,942	1,224,772	114,632	1,779,725	349,493	3,912,958	71.0	1,598,656	1,217,894	778,732	1,295,377
	11 mos.	3,767	51,906,293	4,730,738	62,162,511	5,483,397	13,546,856	1,254,937	18,656,036	3,252,093	43,011,009	69.2	19,151,502	14,098,360	10,665,487	12,759,855
Oregon Short Line	Nov.	2,504	1,616,533	78,893	1,818,539	118,353	281,804	28,502	629,906	114,407	1,190,000	65.4	628,539	380,178	256,279	456,243
	11 mos.	2,504	17,143,359	1,094,015	19,673,601	2,179,380	3,086,524	338,901	6,211,745	1,084,891	13,216,082	67.2	6,457,519	3,933,286	2,945,304	3,021,153
Oregon-Wash. R. R. & Nav. Co.	Nov.	2,293	961,711	87,907	1,166,778	147,517	157,880	43,940	472,011	103,508	930,964	79.8	235,814	134,046	29,890	—80,675
	11 mos.	2,294	11,505,312	1,133,506	14,104,790	2,410,557	1,917,781	514,051	5,063,313	1,007,478	10,984,982	77.9	3,119,808	1,657,874	525,461	—345,016
Los Angeles & Salt Lake	Nov.	1,232	950,797	95,021	1,155,459	136,904	190,308	49,325	394,334	66,318	866,878	75.0	288,581	186,128	63,200	213,284
	11 mos.	1,238	12,260,491	1,409,768	14,871,364	1,562,048	2,126,146	474,927	4,278,598	657,214	9,442,597	63.5	5,428,767	4,138,538	2,833,188	1,501,272
St. Joseph & Grand Island	Nov.	258	210,449	1,698	219,976	102,461	23,770	2,141	72,144	14,261	216,850	98.6	3,126	—2,339	—38,027	57,079
	11 mos.	258	2,559,333	21,412	2,656,063	408,988	283,656	24,018	790,988	134,756	1,651,161	62.2	1,004,902	854,919	486,187	559,427
Utah	Nov.	111	86,877	.....	87,285	10,265	13,697	473	18,880	5,019	48,334	55.4	38,951	25,896	17,510	5,513
	11 mos.	111	623,362	.....	625,542	113,938	185,750	5,746	148,843	54,734	509,011	81.4	116,531	25,759	—80,539	50,596
Virginian	Nov.	619	1,237,099	3,277	1,288,918	83,704	193,942	16,364	221,045	37,812	552,704	42.9	736,214	596,212	652,170	530,328
	11 mos.	619	12,612,532	51,827	13,177,839	1,082,595	2,255,673	180,808	2,312,000	325,610	6,149,378	46.7	7,028,461	5,453,112	6,145,347	5,527,216
Wabash	Nov.	2,447	2,646,730	150,088	3,011,888	314,372	441,732	133,065	1,183,493	185,088	2,243,738	74.5	768,150	699,536	398,974	296,038
	11 mos.	2,455	30,942,266	1,887,767	35,135,476	4,300,987	5,523,742	1,456,704	13,239,729	1,605,870	26,183,426	74.5	8,952,050	7,629,529	3,923,796	2,233,478
Ann Arbor	Nov.	293	262,680	1,927	272,401	23,205	46,841	10,919	117,130	16,193	214,363	78.7	58,038	52,294	30,427	19,570
	11 mos.	293	2,911,613	32,038	3,052,006	271,408	543,942	118,956	1,294,616	137,131	2,367,834	77.6	684,172	555,281	345,428	209,109
Western Maryland	Nov.	883	1,121,019	5,069	1,157,239	175,122	237,383	37,348	303,313	41,302	797,767	68.9	359,472	324,472	325,965	361,668
	11 mos.	889	12,306,206	93,531	12,740,440	1,749,318	2,785,072	382,899	3,279,486	476,453	8,701,186	68.3	4,039,254	3,349,254	3,730,287	3,656,430
Western Pacific	Nov.	1,213	916,098	18,027	994,407	151,459	175,733	51,446	376,315	82,806	873,454	87.8	120,953	65,307	9,186	145,137
	11 mos.	1,213	10,411,462	264,414	11,345,123	1,783,997	1,757,145	591,084	3,971,158	540,373	9,011,649	79.4	2,333,474	1,587,256	1,188,552	812,717
Wheeling & Lake Erie	Nov.	511	779,123	1,236	822,577	68,056	223,158	29,618	263,736	43,356	627,746	76.3	194,831	126,823	130,119	—2,892
	11 mos.	511	9,683,391	16,443	10,308,688	1,018,125	3,062,557	314,083	3,132,395	367,555	7,893,026	76.6	2,415,662	1,546,595	1,417,084	1,590,035
Wichita Falls & Southern	Nov.	203	32,527	338	35,526	9,364	5,606	1,579	13,841	3,417	33,807	95.16	1,719	—1,244	—3,950	15,489
	11 mos.	203	420,729	825	474,937	98,236	71,180	19,231	141,464	38,979	369,090	77.71	105,847	73,295	43,777	84,906

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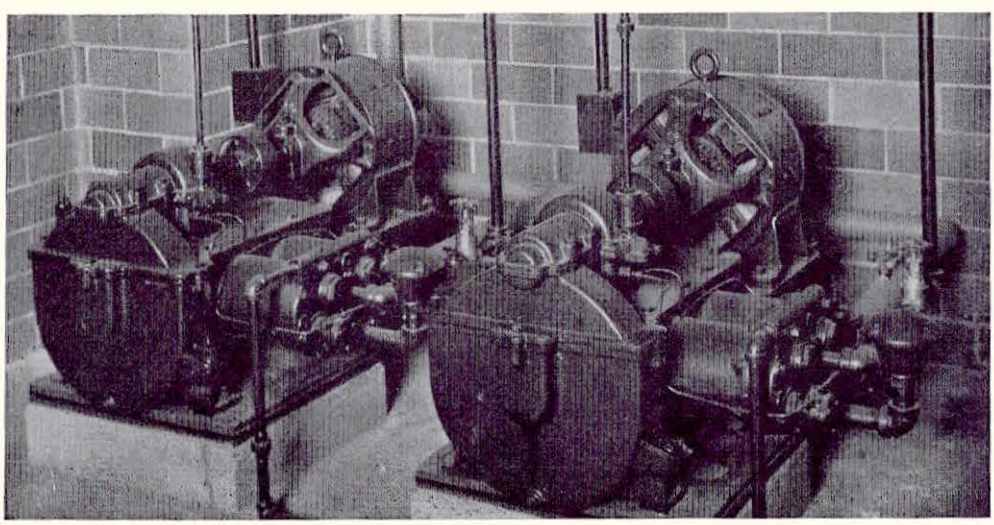

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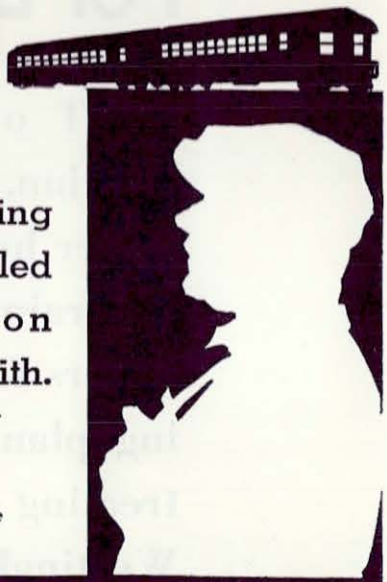

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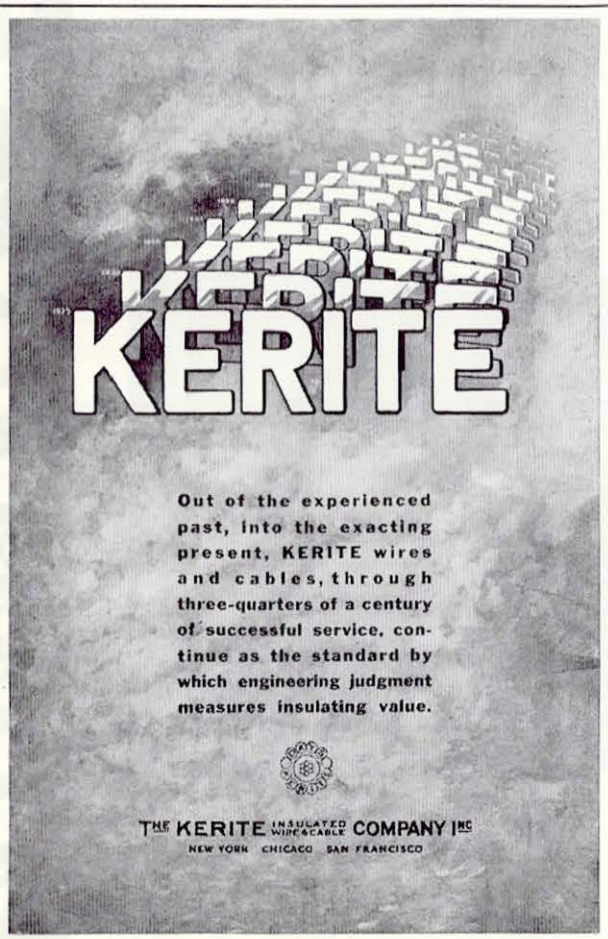
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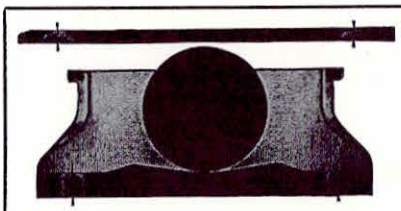

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Details of our products appeared in the following issues of *Railway Age* during 1933, 1934, 1935:

1933—Feb. 4, 25—March 4—April 1—May 6—June 3, 24—July 1, 22—Sept. 2—Oct. 7, 28—Nov. 4—Dec. 2.
1934—Jan. 6, 27—Feb. 17—March 3—April 7, 21—May 5, 19—June 2, 9, 16, 30—October 13—November 3—Dec. 1.
1935—January 5.

Have You Changed Your Address?

Notice of change of address of subscriber should reach the office of Railway Age, 30 Church St., New York, ten days in advance to insure delivery of the following issue to new address. In sending notification of change always include the old address as well as the new.

Name ..... Old Address .....

New Address .....

..... Position ..... Company .....

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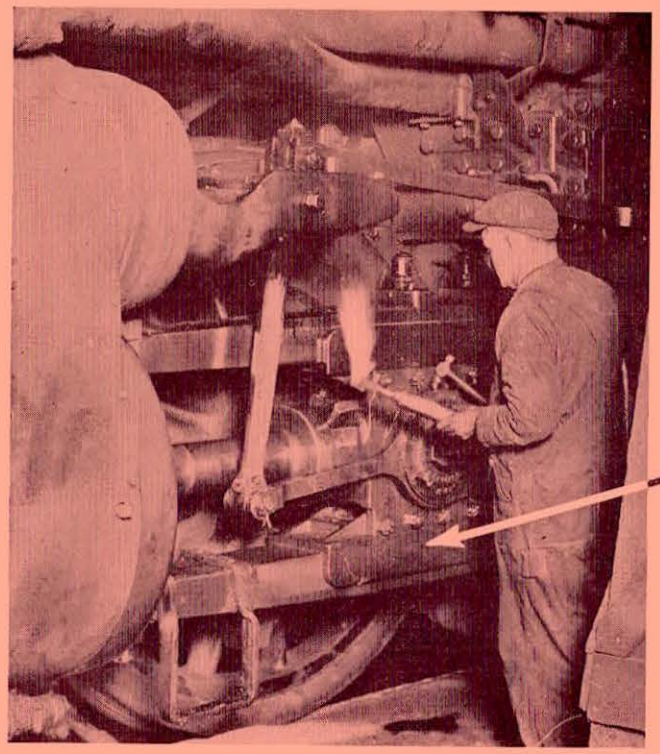

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Between The Crossheads and Guides

CROSSHEAD Shoes are subjected to great frictional wear. The service built into these vital parts has a vital bearing upon cost of locomotive maintenance.

HUNT-SPILLER *Air Furnace* GUN IRON possesses the inherent qualities which are essential to the prevention of wear and resultant crosshead pounds.

Crosshead Shoes stamped with the HSGI trademark offer increased mileage between renewals, fewer guide adjustments and longer service from guides, wrist pins, rod bearings and many other parts which are adversely affected by pounding crossheads.

Application on thousands of modern locomotives proves their ability to meet the present day requirements.

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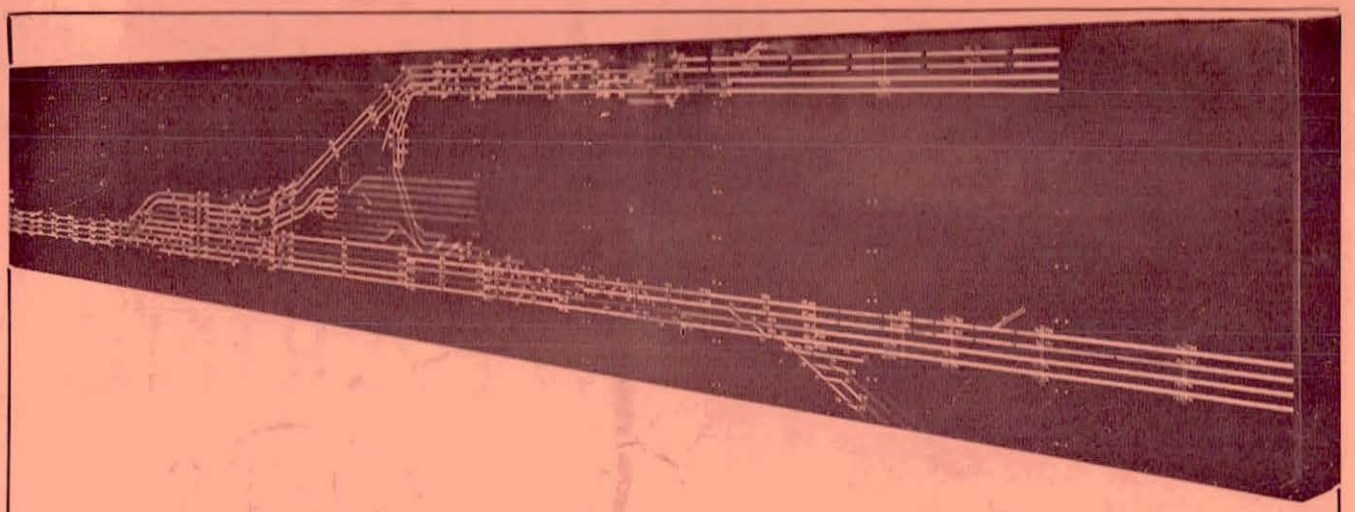
Air Furnace



Signal Modernization Includes Interlocking Consolidation

One railroad constructed an interlocking plant at a junction of two lines of one railroad, the main line of another railroad, and the entrance to the coach yards of both roads, as a part of a program to facilitate train movements and increase track capacity on a five-mile four-track section between the junction and the terminal of the two railroads.

The traffic through this plant was approximately 680 trains daily with 850 trains on holidays. As the coach yards are located just above this junction, the movements are practically double the number of trains. During the two three-hour rush periods, trains move through the plant at an average of one a minute.

The new interlocking plant, which replaced four old interlocking plants, contains a 260-lever power interlocking machine.

This signal modernization has eliminated delays and increased the track capacity and facility of operation.

UNION SWITCH & SIGNAL COMPANY
Swissvale, Pennsylvania

GENERAL RAILWAY SIGNAL COMPANY
Rochester, N. Y.

117

History in the Making

Power interlocking has been in use in the United States for almost half a century.